# DENON

For U.S.A. & Canada model

Ver. 2

# SERVICE MANUAL

## MODEL DVM-2815

## DVD AUDIO-VIDEO AUTO CHANGER

**注　意**

サービスをおこなう前に、このサービスマニュアルを必ずお読みください。本機は、火災、感電、けがなどに対する安全性を確保するために、さまざまな配慮をおこなっており、また法的には「電気用品安全法」にもとづき、所定の許可を得て製造されております。従ってサービスをおこなう際は、これらの安全性が維持されるよう、このサービスマニュアルに記載されている注意事項を必ずお守りください。

- For purposes of improvement, specifications and design are subject to change without notice.

- 本機の仕様は性能改良のため、予告なく変更することがあります。
- 補修用性能部品の保有期間は、製造打切後 8年です。

- Please use this service manual with referring to the operating instructions without fail.

- 修理の際は､必ず取扱説明書を参照の上、作業を行ってください。

- Some illustrations using in this service manual are slightly different from the actual set.

- 本文中に使用しているイラストは、説明の都合上現物と多少異なる場合があります。

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X0186V.02 DE/CDM 0308

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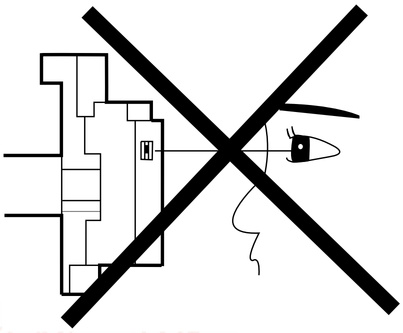
# SPECIFICATIONS

| ITEM | CONDITIONS | UNIT | NOMINAL | LIMIT |
|---|---|---|---|---|
| 1. Video Output | 75 ohm load | Vpp | 1.0 | ± 0.1 |
| 2. Optical Digital Out | | dBm | -18 | |
| 3. Audio (PCM) | | | | |
| 3-1. Output Level | 1kHz 0dB | Vrms | 2.0 | |
| 3-2. S/N | | dB | 120 | |
| 3-3. Freq. Response | | | | |
| DVD | fs=48kHz 4~22kHz | dB | ± 0.5 | |
| CD | fs=44.1kHz 4~20 kHz | dB | ± 0.5 | |
| 3-4. THD+N | | | | |
| DVD | 1 kHz 0dB | % | 0.025 | |
| CD | 1 kHz 0dB | % | 0.03 | |

**NOTES:**
1. All Items are measured without pre-emphasis unless otherwise specified.
2. Power supply : AC120 V 60 Hz
3. Load imp. : 100 K ohm
4. Room ambient : 5 °C ~ 40 °C

# LASER BEAM SAFETY PRECAUTIONS

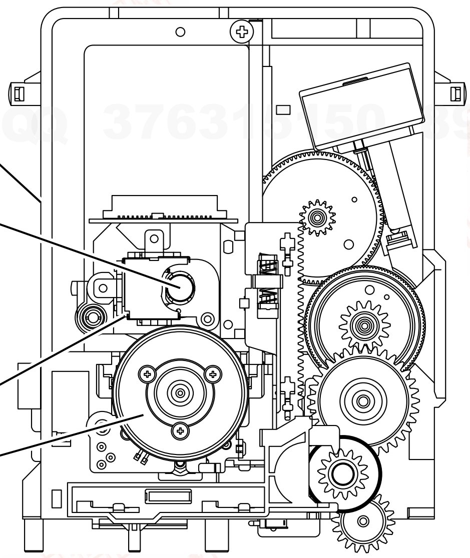
This DVD player uses a pickup that emits a laser beam.



**Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.**

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

**Caution:** Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.




CAUTION
LASER RADIATION
WHEN OPEN. DO NOT
STARE INTO BEAM.

**Location: Inside Top of DVD mechanism.**

# IMPORTANT SAFETY PRECAUTIONS

## Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## Precautions during Servicing

**A.** Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

**B.** In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

**C.** Use specified internal wiring. Note especially:

1)Wires covered with PVC tubing
2)Double insulated wires
3)High voltage leads

**D.** Use specified insulating materials for hazardous live parts. Note especially:

1)Insulation tape
2)PVC tubing
3)Spacers
4)Insulators for transistors

**E.** When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

**F.** Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

**G.** Check that replaced wires do not contact sharp edges or pointed parts.

**H.** When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

**I.** Also check areas surrounding repaired locations.

**J.** Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

**K.** Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure

1)Remove the old connector by cutting the wires at a point close to the connector.
**Important:** Do not re-use a connector. (Discard it.)
2)Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
3)Align the lengths of the wires to be connected. Insert the wires fully into the connector.
4)Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

**L.** When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

# Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

## 1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

**Table 1: Ratings for selected area**

| AC Line Voltage | Clearance Distance (d) (d') |
|---|---|
| 120 V | ≥ 3.2mm (0.126 inches) |

**Note:** This table is unofficial and for reference only.
Be sure to confirm the precise values.

## 2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

**Measuring Method (Power ON) :**
Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

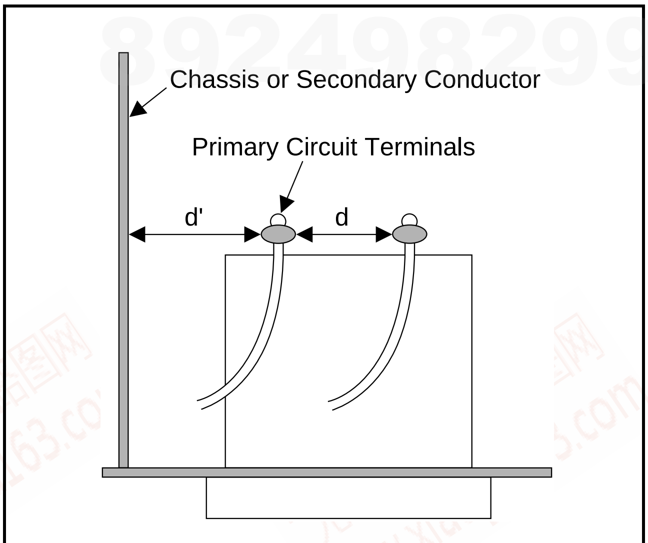



**Fig. 1**

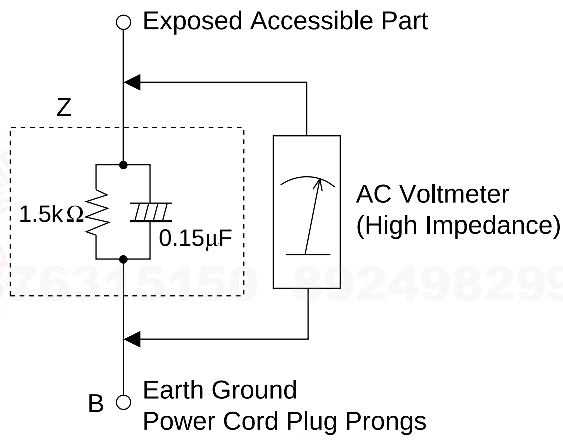



**Fig. 2**

**Table 2: Leakage current ratings for selected areas**

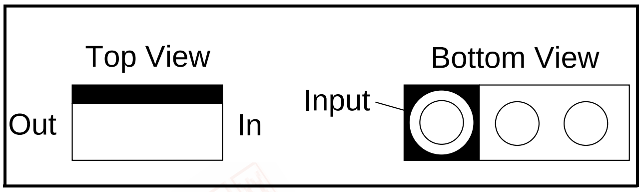
| AC Line Voltage | Load Z | Leakage Current (i) | Earth Ground (B) to: |
|---|---|---|---|
| 120 V | 0.15μF CAP. & 1.5kΩ RES. Connected in parallel | i≤0.5mA Peak | Exposed accessible parts |

**Note:** This table is unofficial and for reference only. Be sure to confirm the precise values.

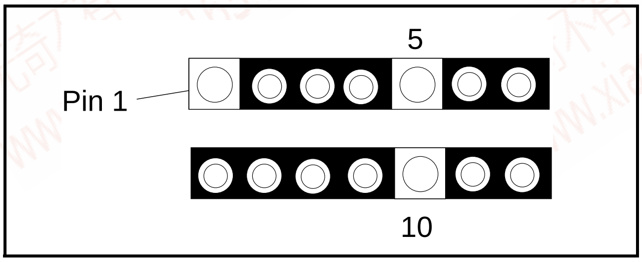
# STANDARD NOTES FOR SERVICING

## Circuit Board Indications

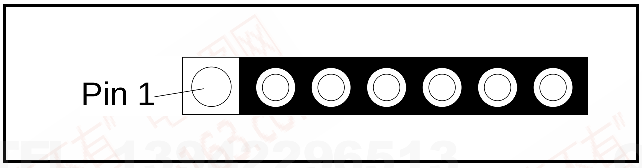
1. The output pin of the 3 pin Regulator ICs is indicated as shown.




2. For other ICs, pin 1 and every fifth pin are indicated as shown.

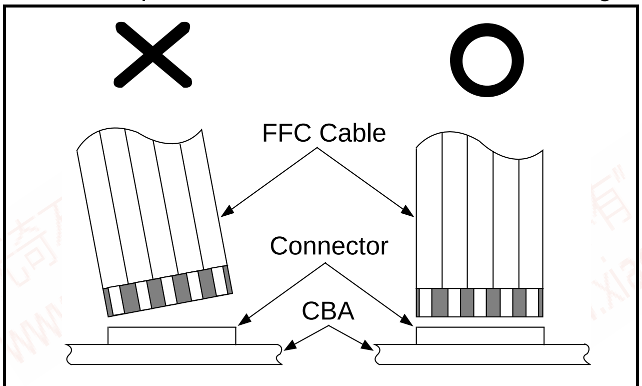



3. The 1st pin of every male connector is indicated as shown.




## Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.




* Be careful to avoid a short circuit.

## How to Remove / Install Flat Pack-IC

### 1. Removal

**With Hot-Air Flat Pack-IC Desoldering Machine:.**

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

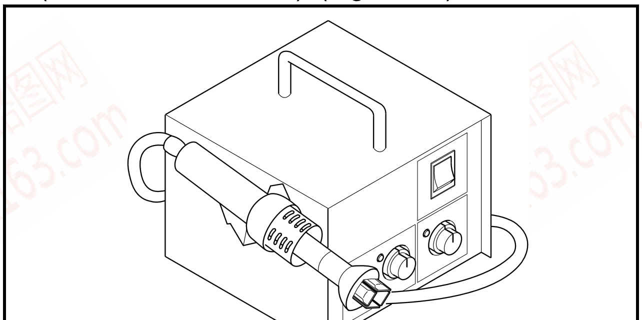


**Fig. S-1-1**

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

### Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

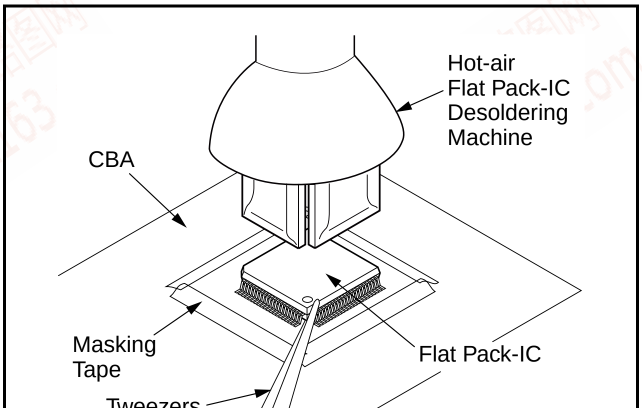



**Fig. S-1-2**

**With Soldering Iron:**

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

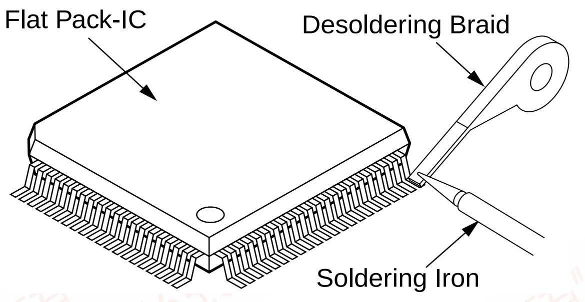



Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

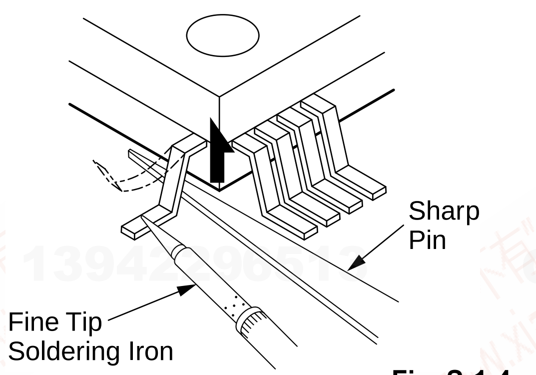



Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

**With Iron Wire:**

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

**Note:**

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

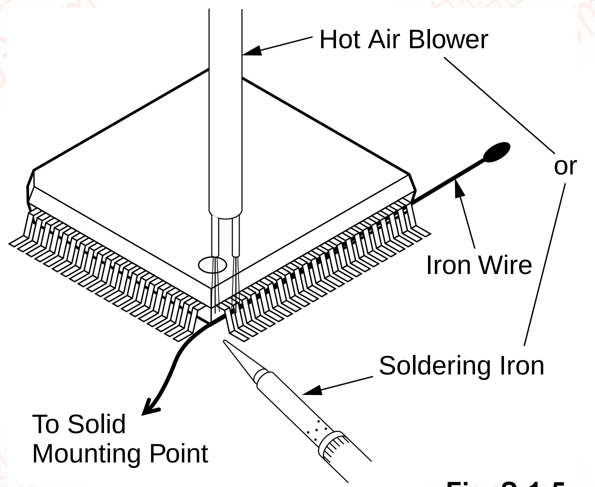



Fig. S-1-5

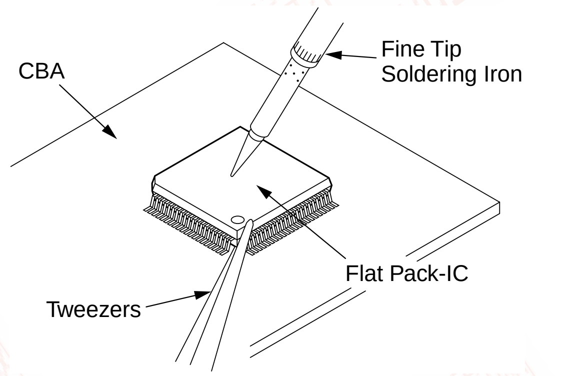



Fig. S-1-6

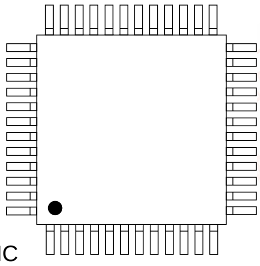
## 2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The “I” mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

Example :



Pin 1 of the Flat Pack-IC is indicated by a "●" mark.

Fig. S-1-7

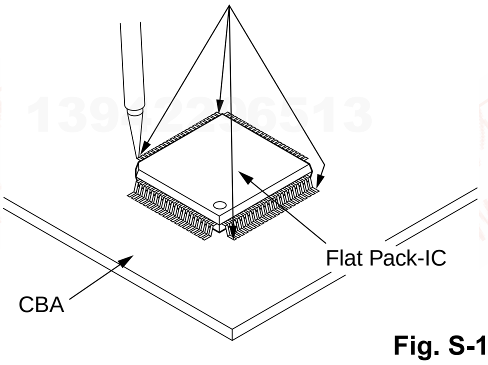



Fig. S-1-8

# Instructions for Handling Semi-conductors

Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

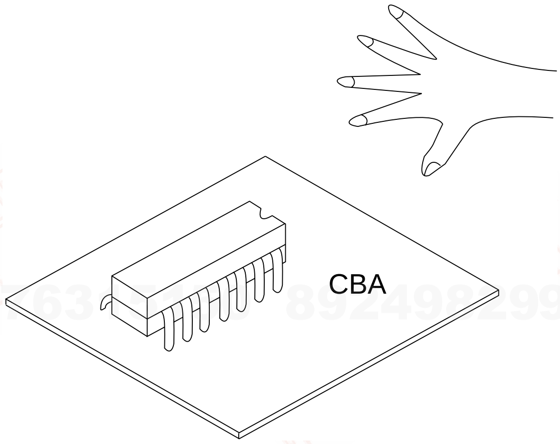
## 1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

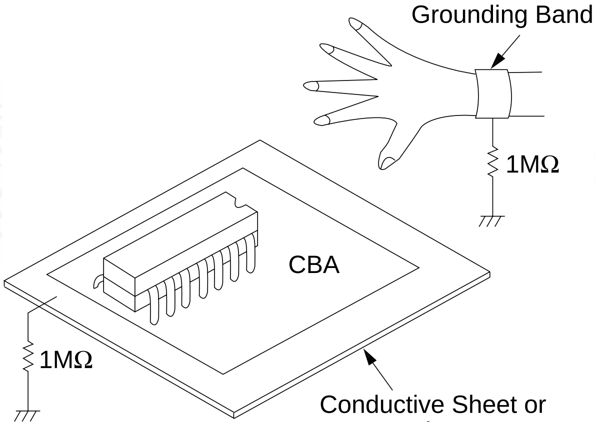
## 2. Ground for Workbench

(1) Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

< Incorrect >



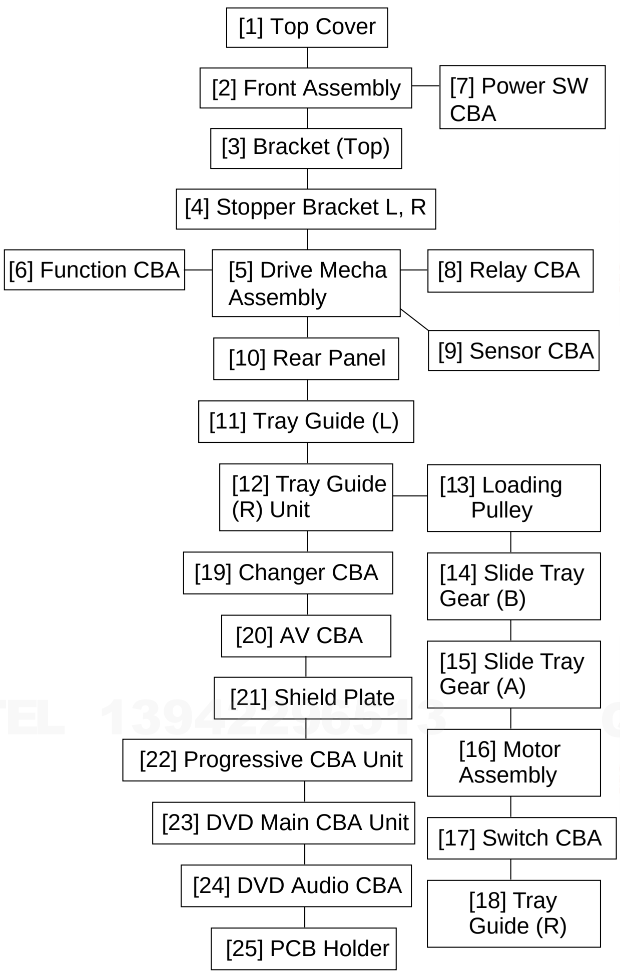

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# CABINET DISASSEMBLY INSTRUCTIONS

## 1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.




## 2. Disassembly Method

| ID/ LOC. No. | PART | REMOVAL | | |
|---|---|---|---|---|
| | | Fig. No. | REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER | Note |
| [1] | Top Cover | D1 | 6(S-1) | - |
| [2] | Front Assembly | D2 | 2(S-2), *8(L-1) | 1-1 |
| [3] | Bracket (Top) | D3 | *2(L-2) | - |
| [4] | Stopper Bracket L, R | D3 | 4(S-3) | - |
| [5] | Drive Mecha Assembly | D4, D5 | CN201, CN3001 | 2 2-1 3 4 |
| [6] | Function CBA | D4 | *2(L-3), CN2201 | - |
| [7] | Power SW CBA | D4 | CN2103, (S-4) | - |
| [8] | Relay CBA | D6 | 2(S-5), CN5002, CN5003, CN5005 | - |
| [9] | Sensor CBA | D6 | 2(S-6) | - |
| [10] | Rear Panel | D7 | 4(S-7), 13(S-8) | - |
| [11] | Tray Guide (L) | D8 | 3(S-9) | - |
| [12] | Tray Guide (R) Unit | D8 | 4(S-10), CN3003, CN3004 | - |
| [13] | Loading Pulley | D9 | (S-11), Belt L | - |
| [14] | Slide Tray Gear (B) | D9 | (S-12), *(P-1) | - |
| [15] | Slide Tray Gear (A) | D9 | ---------- | - |
| [16] | Motor Assembly | D9 | (S-13) | - |
| [17] | Switch CBA | D9 | *2(L-4) | - |
| [18] | Tray Guide (R) | D9 | ---------- | - |
| [19] | Changer CBA | D10 | CN3102, 2(S-14), CN3301 | - |
| [20] | AV CBA | D10 | 6(S-15), CN1601, CN1602, CN1603, CN1001, FFC Clamper | - |
| [21] | Shield Plate | D11 | 2(S-16), 2(W-1) | - |
| [22] | Progressive CBA Unit | D11 | CN1801 | - |
| [23] | DVD Main CBA Unit | D11 | 2(S-17), CN901 | - |
| [24] | DVD Audio CBA | D11 | (S-18) | - |
| [25] | PCB Holder | D11 | (S-19) | - |
| ↓ (1) | ↓ (2) | ↓ (3) | ↓ (4) | ↓ (5) |

(1): Identification (location) No. of parts in the figures

(2): Name of the part

(3): Figure Number for reference

(4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw,
CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

(5): Refer to “Reference Notes.”

## Reference Notes

CAUTION 1: Locking Tabs (L-1) are fragile. Be careful not to break them.

1-1. To release eight Locking Tabs (L-1), first release five Locking Tabs (A), and then three Locking Tabs (B). (Fig. D2)

CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc, during unpacking or repair work.
To avoid damage of pickup follow next procedures.

2-1. Short the three short lands of FPC cable with solder before removing the FFC cable (CN201) from it. If you disconnect the FFC cable (CN201), the laser diode of pickup will be destroyed. (Fig. D5)

CAUTION 3: When reassembling, confirm the FFC cable (CN201) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. D5)

CAUTION 4: Before reinstalling, turn the Slide Tray Gear (B) fully clockwise. (Fig. D4)

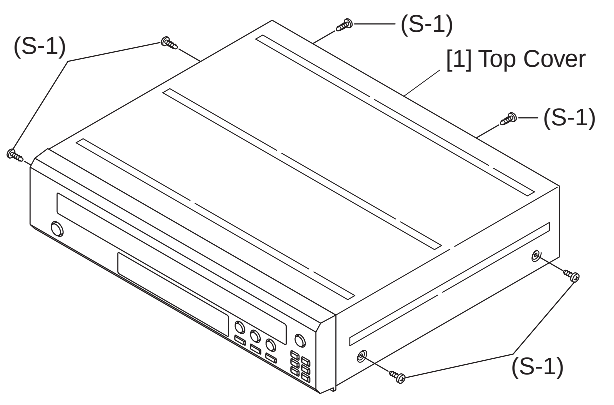



Fig. D1

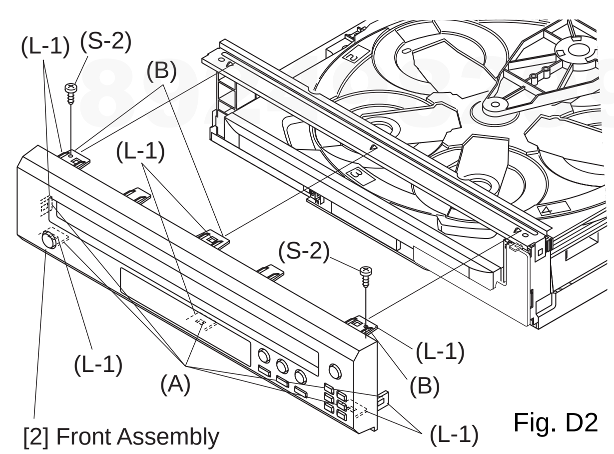



Fig. D2

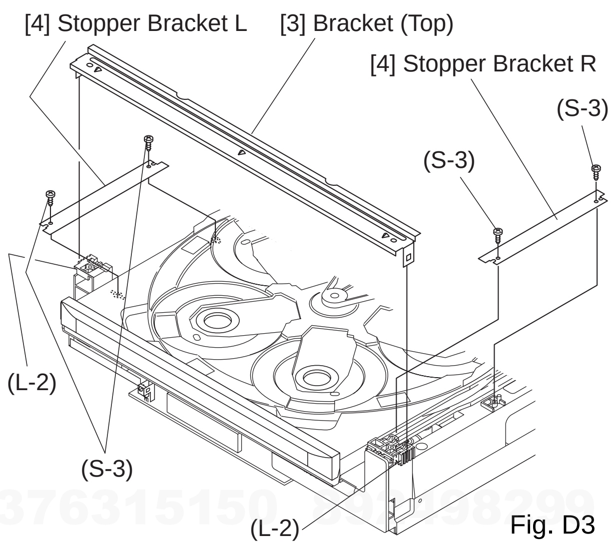



Fig. D3

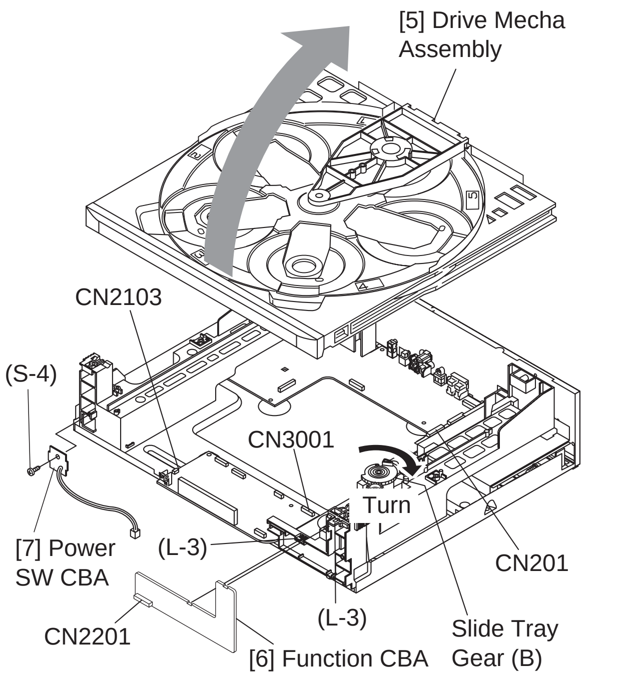



Fig. D4

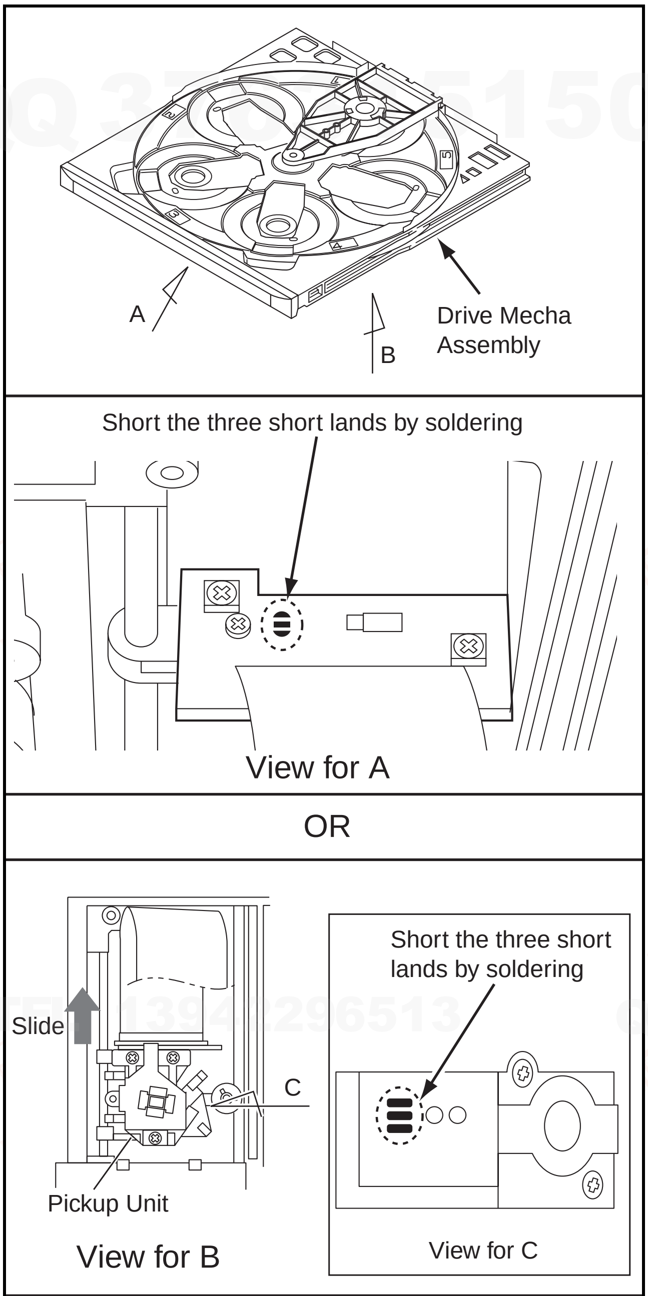



Fig. D5

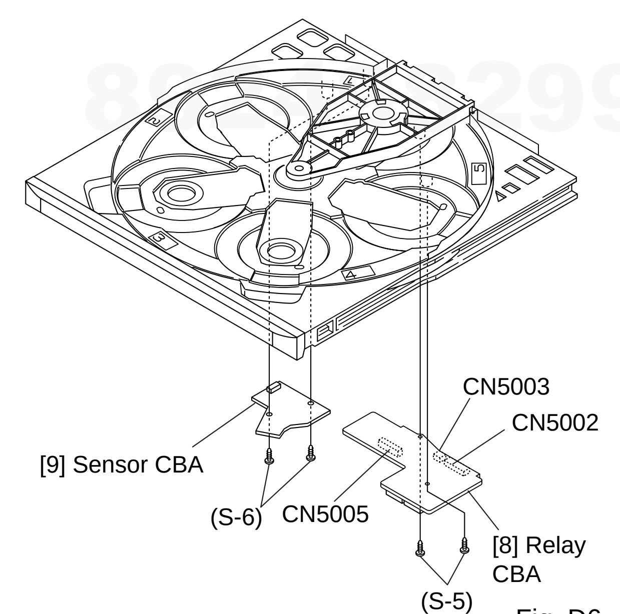



Fig. D6

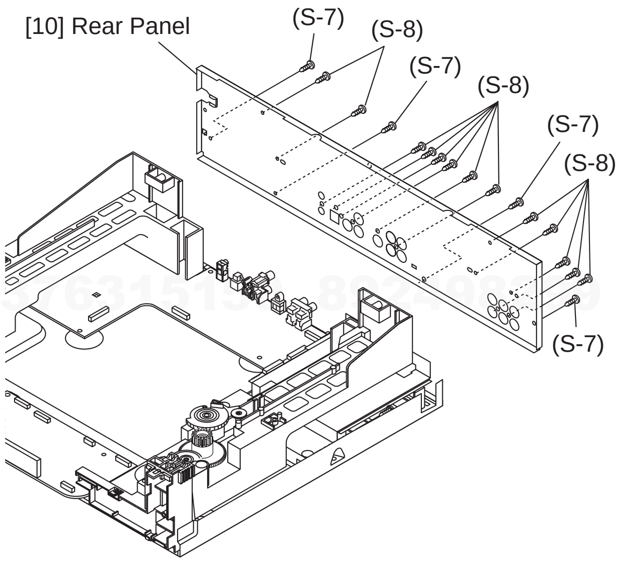



Fig. D7

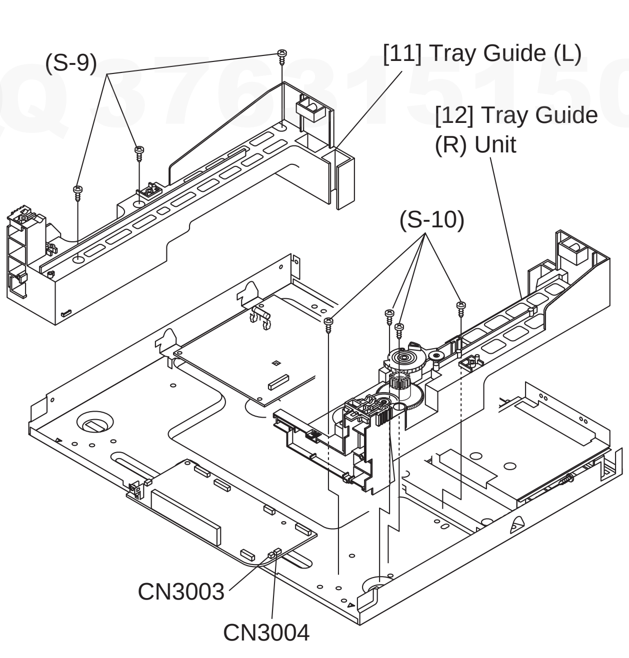



Fig. D8

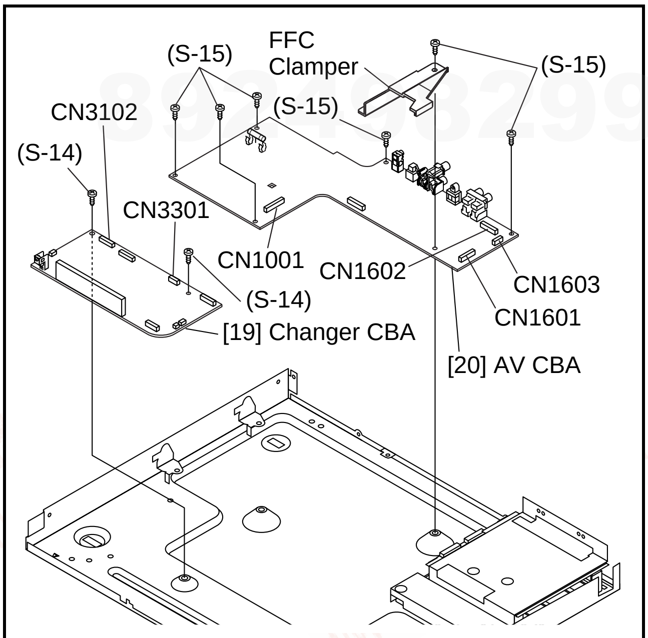



Fig. D10

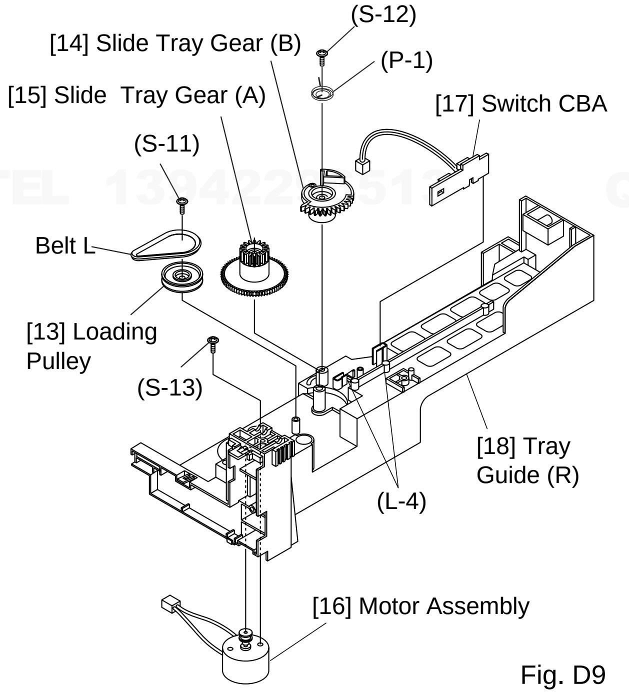



Fig. D9

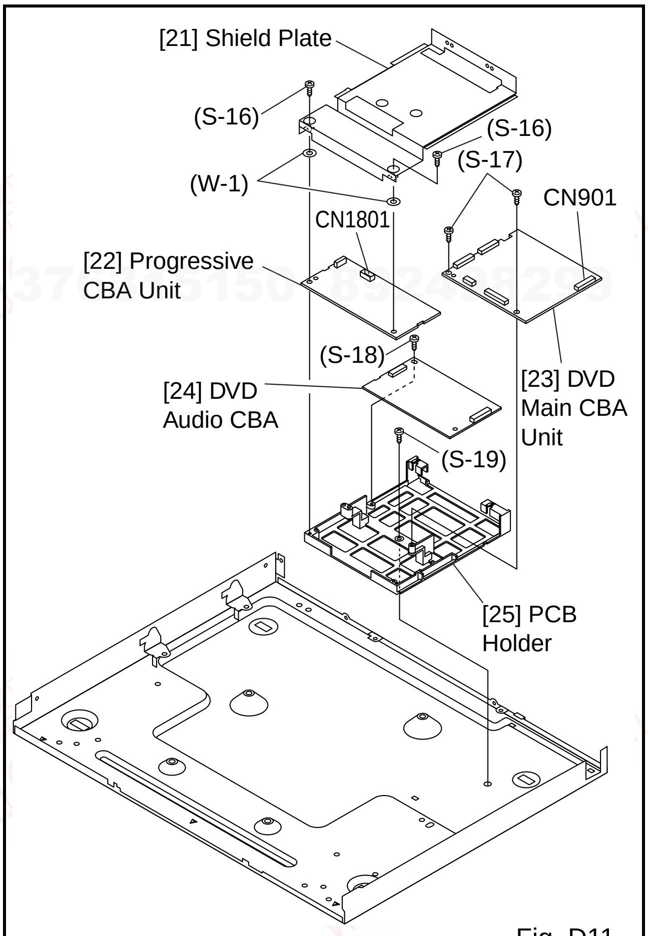



Fig. D11

# TROUBLESHOOTING

## FLOW CHART NO.1

**The power cannot be turned on.**

- Is the fuse normal?
  - No → See FLOW CHART No.2 <The fuse blows out.>
  - Yes ↓
- Is normal state restored when once unplugged power cord is plugged again after several seconds?
  - No → Check if there is any leak or shor-circuiting on the primary circuit component, and service it if defective. (Q1001, Q1003, T1001, D1001, D1002, D1004, D1005, D1011, C1003, C1005)
  - Yes ↓
- Is the EV +9V line voltage normal?
  - No → Check if there is any leak or shor-circuiting on the primary circuit component, and service it if defective. (Q1001, Q1003, T1001, D1001, D1002, D1004, D1005, D1011, C1003, C1005)
  - Yes ↓
- Is each voltage of the secondary side normal?
  - No → Check each rectifying circuit of the secondary circuit and service it if defective.
  - Yes ↓
- When pressing POWER button (SW2201), is the voltage of 0V supplied to pin(38) of IC3001?
  - No → Check POWER button (SW2001) and their periphery, and service it if defective.
  - Yes ↓
- Is the voltage of 3.3V supplied to pin(1) of IC3001?
  - No → Check CHG+5V line and service it if defective. See FLOW CHART No.2 <The fuse blows out.>
  - Yes ↓
- Is the voltage of 3.3V outputted to pin(19) of CN1001?
  - No → Replace DVD Main CBA unit.
  - Yes ↓
- Replace IC3001.

## FLOW CHART NO.2

**The fuse blows out.**

- Check the presence that the primary component is leaking or shorted and service it if defective.
- Check the presence that the rectifying diode or circuit is shorted in each rectifying circuit of secondary side, and service it if defective.
- ↓ After servicing, replace the fuse.

## FLOW CHART NO.3

**When the output voltage fluctuates.**

- Does the photo coupler circuit on the secondary side operate normally?
  - No → Check IC1001, IC1006, D1015 and their periphery, and service it if defective.
  - Yes ↓
- Check IC1001, D1012, D1024 and their periphery, and service it if defective.

## FLOW CHART NO.4

**When buzz sound can be heard in the vicinity of AV circuit.**

- Check if there is any short-circuit on the rectifying diode and the circuit in each rectifying circuit of the secondary side, and service it if defective. (D1003, D1006, D1008, D1016, D1030, IC1002, Q1002, Q1004, Q1010, Q1011, Q1014)

## FLOW CHART NO.5

**-FL is not outputted.**

- Is -24V voltage supplied to the anode of D1003?
  - No → Check D1003 and periphery circuit, and service it if defective.
  - Yes ↓
- Check if there is any leak or short-circuit on the loaded circuit, and service it if defective.

**FLOW CHART NO.6**

P-ON+9V (EV+9V) is not outputted.

- Is 9V voltage supplied to the emitter of Q1002?
  - No → Check D1030, C1035, C1048, L1009 and the periphery circuit, and service it if defective.
  - Yes → Is the voltage of base on Q1002 lower than the voltage of emitter on Q1002 when turning the power on?
    - No → Check Q1016 and service it if defective.
    - Yes → Replace Q1002.

**FLOW CHART NO.7**

P-ON+5V is not outputted. (P-ON+9V is outputted normally.)

- Is the "H" pulse inputted into the base of Q1004?
  - No → Check R1068 and D1046, and service it if defective.
  - Yes → Replace Q1004.

**FLOW CHART NO.8**

P-ON+3.3V is not outputted. (P-ON+9V is outputted normally.)

- Is 3.3V voltage supplied to the collector of Q1011?
  - No → Check D1008, D1015, C1007, C1038, L1007 and the periphery circuit, and service it if defective.
  - Yes → Replace Q1011 and R1067.

**FLOW CHART NO.9**

EV+5V is not outputted.

- Is EV+9V outputted normally?
  - No → Refer to "FLOW CHART NO.6" <P-ON+9V (EV+9V) is not outputted.>
  - Yes → Check Q1014, D1047 and the periphery circuit, and service it if defective.

**FLOW CHART NO.10**

EV+1.5V is not outputted.

- Is 2.5V voltage supplied to Pin(1) of IC1002?
  - No → Check D1006, C1014, C1050, L1008 and the periphery circuit, and service it if defective.
  - Yes → Is 1.25V voltage supplied to Pin(4) of IC1002?
    - No → Is the "L" pulse outputted into Pin(18) of IC3001?
      - Yes → Check the circuit between Pin(18) of IC3001 and Pin(4) of IC1002, and service it if defective.
      - No → Replace IC3001.
    - Yes → Replace IC1002.

**FLOW CHART NO.11**

EV+3.3V is not outputted.

- Is 3.3V voltage supplied to emitter of Q1010?
  - No → Check D1008, D1015, C1007, C1038, L1007 and the periphery circuit, and service it if defective.
  - Yes → Is the "L" pulse inputted to base of Q1012?
    - No → Is the "L" pulse outputted into Pin(18) of IC3001?
      - Yes → Check the circuit between Pin(18) of IC3001 and base of Q1012, and service it if defective.
      - No → Replace IC3001.
    - Yes → Check Q1010, Q1012, R1087 and R1088, and service it if defective.

**FLOW CHART NO.12**

The fluorescent display tube does not light up.

Is 3.3V voltage supplied to Pin(6) and Pin(24) of IC2001?
- No → Check the P-ON+3.3V line and service it if defective.
- Yes ↓

Is the voltage of approximately -24V to -28V supplied to Pin(15) of IC2001?
- No → Check the -FL (-28V) line and service it if defective.
- Yes ↓

Is there 500kHz oscillation at Pin(26) of IC2001?
- No → Check R2015, IC2001 and their periphery, and service it if defective.
- Yes ↓

Are the filament voltage supplied between Pins(1, 2) and Pins(34, 35) of the fluorescent display tube? And the negative voltage applied between these pins and GND?
- No → Is -17V voltage supplied to collector of Q1005?
  - No → Check D1016, D1017, T1001, and their periphery, and service it if defective.
  - Yes → Is the "H" signal inputted to base of Q1016?
    - No → Check the EV+3.3V line, and service it if defective.
    - Yes → Check Q1015, Q1016, D1055, and their periphery, and service it if defective.
- Yes → Replace the fluorescent display tube.

**FLOW CHART NO.13**

The key operation is not functioning.

Are the contact point and the installation state of the key switches (SW2201 - 2214) normal?
- No → Re-install the switches (SW2201 - 2214) correctly or replace the poor switch.
- Yes ↓

**Terminal Voltage of Pins (38 - 42) on IC3001**

| | IC3001 | | | | |
|---|---|---|---|---|---|
| | 38pin | 39pin | 40pin | 41pin | 42pin |
| | KEY1 | KEY2 | KEY3 | KEY4 | KEY5 |
| 0.00 - 0.50 | SW2201 POWER | SW2204 SKIP DOWN | SW2207 DISC-5 | SW2210 DISC-3 | SW2213 STILL/PAUSE |
| 0.51 - 1.53 | SW2202 STOP | SW2205 SKIP UP | SW2208 DISC-4 | SW2211 DISC-2 | SW2214 EXTRA CHANGE |
| 1.54 - 2.57 | SW2203 PLAY | SW2206 SELECT | SW2209 OPEN/CLOSE | SW2212 DISC-1 | ----- |
| 2.58 - 3.30 | (KEY OFF) | (KEY OFF) | (KEY OFF) | (KEY OFF) | (KEY OFF) |

Is the control voltage normally supplied to pins(38, 39, 40, 41, 42) of IC3001?
- No → Check the switches (SW2201 - 2214) and their periphery, and service it if defective.
- Yes → Replace IC3001.

**FLOW CHART NO.14**

No operation is possible from the remote control unit.

↓

Operation is possible from the DVD, but no operation is possible from the remote control unit.

↓ Yes

Is 5V voltage supplied to the Pin(3) terminal of the infrared remote control receiver (RM2001)?
- No → Check P-ON+5V line and service it if defective.

↓ Yes

Is the "L" pulse sent out Pin(1) terminal of receiver (RM2001) when the infrared remote control is activated?
- No → Replace the infrared remote control receiver (RM2001). Or replace the remote control unit.

↓ Yes

Is the "L" pulse supplied to the Pin(22) of CN1001?
- No → Check the line between Pin(20) of IC2002 and Pin(22) of CN1001, and service it if defective.

↓ Yes

Replace DVD Main CBA.

**FLOW CHART NO.15**

The disc tray cannot be opened and closed. (It can be done using the remote control unit.)

↓

Is the normal control voltage inputted to Pin(40) of IC3001?
- No → Replace the "OPEN/CLOSE" button (SW2209).

↓ Yes

Refer to "FLOW CHART NO.16" <The disc tray cannot be opened and closed.>

**FLOW CHART NO.16**

The disc tray cannot be opened and closed.

↓

Replace the DVD Main CBA.

↓

No improvement can be found.
- No → Original DVD Main CBA is poor.

↓ Yes

Replace the DVD Mecha.

**FLOW CHART NO.17**

[No Disc] indicated. (When the focus error occurs.)

↓

Replace the DVD Main CBA.

↓

No improvement can be found.
- No → Original DVD Main CBA is poor.

↓ Yes

Replace the DVD Mecha.

**FLOW CHART NO.18**

[No Disc] indicated. (When the focus servo is not functioning.)

↓

Replace the DVD Main CBA.

↓

No improvement can be found. — No → Original DVD Main CBA is poor.

↓ Yes

Replace the DVD Mecha.

**FLOW CHART NO.19**

[No Disc] indicated. (When the laser beam does not light up.)

↓

Replace the DVD Main CBA.

↓

No improvement can be found. — No → Original DVD Main CBA is poor.

↓ Yes

Replace the DVD Mecha.

**FLOW CHART NO.20**

Both functions of picture and sound do not operate normally.

↓

Replace the DVD Main CBA.

↓

No improvement can be found. — No → Original DVD Main CBA is poor.

↓ Yes

Replace the DVD Mecha.

**FLOW CHART NO.21**

Picture does not appear normally.

↓

Set the disc on the disc tray, and playback.

↓

Are the video signals outputted to each pin (as shown below) of CN1601 and CN1602 on the AV CBA?

<Interlace mode>

| | | |
|---|---|---|
| CN1601 | 7PIN | S-Y |
| CN1601 | 9PIN | S-C |
| CN1601 | 5PIN | Cb |
| CN1601 | 3PIN | Cr |

— No → Replace the DVD Main CBA or DVD Mecha.

<Progressive mode>

| | | |
|---|---|---|
| CN1602 | 2PIN | S-Y |
| CN1602 | 4PIN | Pb |
| CN1602 | 6PIN | Pr |

— No → Is FFC cable (W1802) connecting CN6102 on the AV CBA and Progressive CBA Unit normally?

- No → Replace FFC cable.
- Yes ↓ Is FFC cable (W1801) connecting CN1801 on the Progressive CBA Unit and DVD Main CBA Unit normally?
  - No → Replace FFC cable.
  - Yes ↓ Is component video signals outputted in interlace mode?
    - Yes → Replace Progressive CBA Unit.
    - No → Replace the DVD Main CBA Unit or DVD Mecha.

↓ (Yes)

(continued to "A" on next page)

A

↓ Yes

**Are the video signals outputted to each pin of IC6102?**

| IC | Pin | Signal |
|---|---|---|
| IC6102 | 4PIN | S-Y |
| IC6102 | 15PIN | Pb/Cb |
| IC6102 | 14PIN | Pr/Cr |

- No → Is 5V voltage supplied to Pin(16) of IC6102?
  - Yes → Replace IC6102.
  - No → Check P-ON+5V line and service it if defective.

↓ Yes

**Are the video signals shown above inputted into each pin of IC1402?**

| IC | Pin | Signal |
|---|---|---|
| IC1402 | 6PIN | S-Y |
| IC1402 | 9PIN | Pb/Cb |
| IC1402 | 11PIN | Pr/Cr |

- No → Check the line between each pin of IC6102 and each pin of IC1402 on the AV CBA, and service it if defective.

| From | | To | | Signal |
|---|---|---|---|---|
| IC6102 | 4PIN → | IC1402 | 6PIN | S-Y |
| IC6102 | 15PIN → | IC1402 | 9PIN | Pb/Cb |
| IC6102 | 14PIN → | IC1402 | 11PIN | Pr/Cr |

↓ Yes

**Are the video signals shown above inputted into pin(2) of IC1402?**

- No → Check the line between pin(9) of CN1601 and pin(2) of IC1402 on the AV CBA, and service it if defective.

↓ Yes

**Are the video signals outputted to each pin of IC1402?**

| IC | Pin | Signal |
|---|---|---|
| IC1402 | 21PIN | CVBS |
| IC1402 | 18PIN | S-Y |
| IC1402 | 23PIN | S-C |
| IC1402 | 15PIN | Pb/Cb |
| IC1402 | 13PIN | Pr/Cr |

- No → Is 5V voltage applied to the pin(1, 24) of IC1402?
  - Yes → Replace IC1402.
  - No → Check P-ON+5V line and service it if defective.

↓ Yes

**Are the video signals outputted to the specific output terminal?**

- Are the luminance signals outputted to the S-OUT terminal (JK1401)?
  - No → Check the periphery of JK1401 from Pin (18) of IC1402 and service it if defective.
- Are the chroma signals outputted to the S-OUT terminal (JK1401)?
  - No → Check the periphery of JK1401 from Pin (23) of IC1402 and service it if defective.
- Are the component video signals outputted to the VIDEO OUT terminal (JK1403)?
  - No → Check the periphery of JK1403 from Pins (13, 15, 18) of IC1402 and service it if defective.

**FLOW CHART NO.22**

Audio is not outputted.

↓

Set the disc on the disc tray, and playback.

↓

Are the analog audio signals outputted to each pin of CN1601 on AV CBA?

CN1601 13PIN AUDIO-L
CN1601 15PIN AUDIO-R

No → Replace the DVD Main CBA or DVD Mecha.

↓ Yes

Are the analog audio signals inputted to each pin of IC1201.

IC1201 2PIN AUDIO-L
IC1201 6PIN AUDIO-R

No → Check each line between each pin of CN1601 and each pin of IC1201 on AV CBA, and service it if defective.

CN1601 13PIN → IC1201 2PIN AUDIO-L
CN1601 15PIN → IC1201 6PIN AUDIO-R

↓ Yes

Is the "H" level mute signal outputted to CN1601 on AV CBA ?

CN1601 12PIN A-MUTE
CN1601 16PIN A-R-MUTE
CN1601 14PIN A-L-MUTE

No → Replace the DVD Main CBA or DVD Mecha.

↓ Yes

Are the analog audio signals inputted to each pin of IC1201?

IC1201 1PIN AUDIO-L
IC1201 7PIN AUDIO-R

No → Replace IC1201.

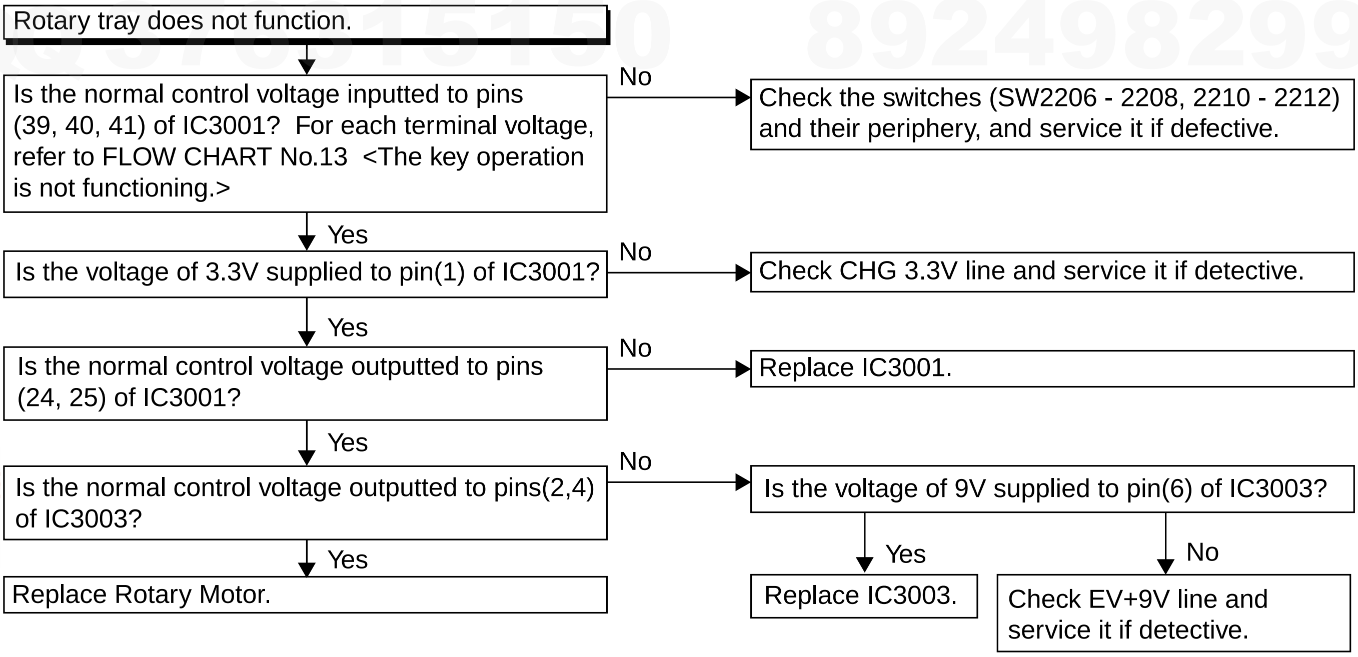
↓ Yes

Are the audio signals outputted to the specific output terminal?

Are the audio signals outputted to the audio terminal (JK1201)?

No → Check the periphery between Pins(1,7) of IC1201 and JK1201, and service it if defective.

**FLOW CHART NO.23**



**FLOW CHART NO.24**

Audio is not outputted. (JK7101)

↓

Set the disc (with 5.1ch Audio) on the disc tray, and playback.

↓

Are the PCM data signals outputted to each pin of CN7102 on DVD Audio CBA.

CN7102 7PIN PCM-DATA0
CN7102 5PIN PCM-DATA1
CN7102 3PIN PCM-DATA2

- No → Replace the DVD Main CBA or DVD Mecha.
- Yes ↓

Are the PCM data signals inputted to each pin of IC7201, IC7202 and IC7203.

IC7201 2PIN PCM-DATA0
IC7202 2PIN PCM-DATA1
IC7203 2PIN PCM-DATA2

- No → Check each line between each pin of CN7102 and each pin of IC7201,IC7202,IC7203 and service it if defective.
  CN7102 7PIN → IC7201 2PIN PCM-DATA0
  CN7102 5PIN → IC7202 2PIN PCM-DATA1
  CN7102 3PIN → IC7203 2PIN PCM-DATA2
- Yes ↓

Are the analog audio signals outputted to each pin of IC7201, IC7202 and IC7203.

IC7201 7, 8PIN FRONT(L/R)
IC7202 7, 8PIN SORROUND(L/R)
IC7203 7, 8PIN CENTER/SUBWOOFER

- No → Is +5V voltage applied to the pin(6) of IC7201, IC7202 and IC7203? And is +3.3V voltage applied to the pin(5) of IC7201, IC7202 and IC7203?
  - Yes → Replace ICs (IC7201, IC7202 or IC7203).
  - No → Check P-ON+3.3V or AUDIO+5V line and service it if defective.
- Yes ↓

Are the analog audio signals inputted to each pin of IC7301, IC7401 and IC7501.

IC7301 2, 6PIN FRONT(L/R)
IC7401 2, 6PIN SORROUND(L/R)
IC7501 2, 6PIN CENTER/SUBWOOFER

- No → Check each line between each pin of IC7201 - IC7203 and each pin of IC7301,IC7401 and IC7501 and service it if defective.
  IC7201 7,8PIN → IC7301 2,6PIN FRONT(L/R)
  IC7202 7,8PIN → IC7401 2,6PIN SORROUND(L/R)
  IC7203 7,8PIN → IC7501 2,6PIN CENTER/SUBWOOFER
- Yes ↓

Are the analog audio signals outputted to each pin of IC7301, IC7401 and IC7501.

IC7301 1,7PIN FRONT(L/R)
IC7401 1,7PIN SORROUND(L/R)
IC7501 1,7PIN CENTER/SUBWOOFER

- No → Replace ICs (IC7301, IC7401 or IC7501).
- Yes ↓

Do the mute signals of each line (as shown below) become to "H" level?

FRONT(L) → CN7102 18PIN → IC7201 11PIN
FRONT(R) → CN7102 18PIN → IC7201 12PIN
- No → Replace the DVD Main CBA Unit or IC7201.

SORROUND(L) → CN7102 19PIN → IC7202 12PIN
SORROUND(R) → CN7102 19PIN → IC7202 11PIN
- No → Replace the DVD Main CBA Unit or IC7202.

CENTER → CN7102 19PIN → IC7203 12PIN
SUBWOOFER → CN7102 19PIN → IC7203 11PIN
- No → Replace the DVD Main CBA Unit or IC7203.

- Yes ↓

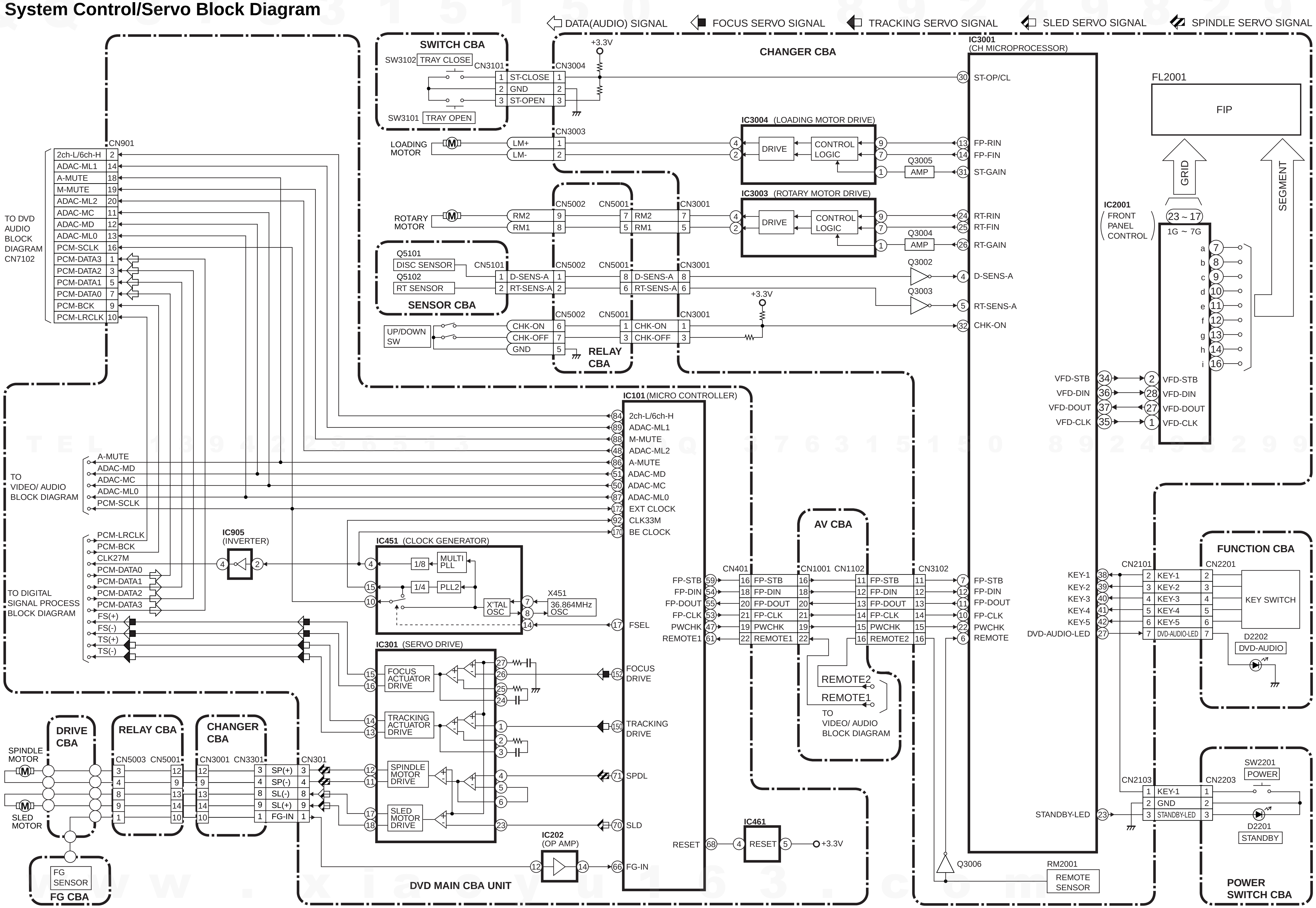
Is the analog audio signal of each line outputted to each terminal of JK7101 (as shown below) ?

IC7301 7PIN → JK7101 FRONT(L)
IC7301 1PIN → JK7101 FRONT(R)
IC7401 7PIN → JK7101 SORROUND(L)
IC7401 1PIN → JK7101 SORROUND(R)
IC7501 1PIN → JK7101 CENTER
IC7501 7PIN → JK7101 SUBWOOFER

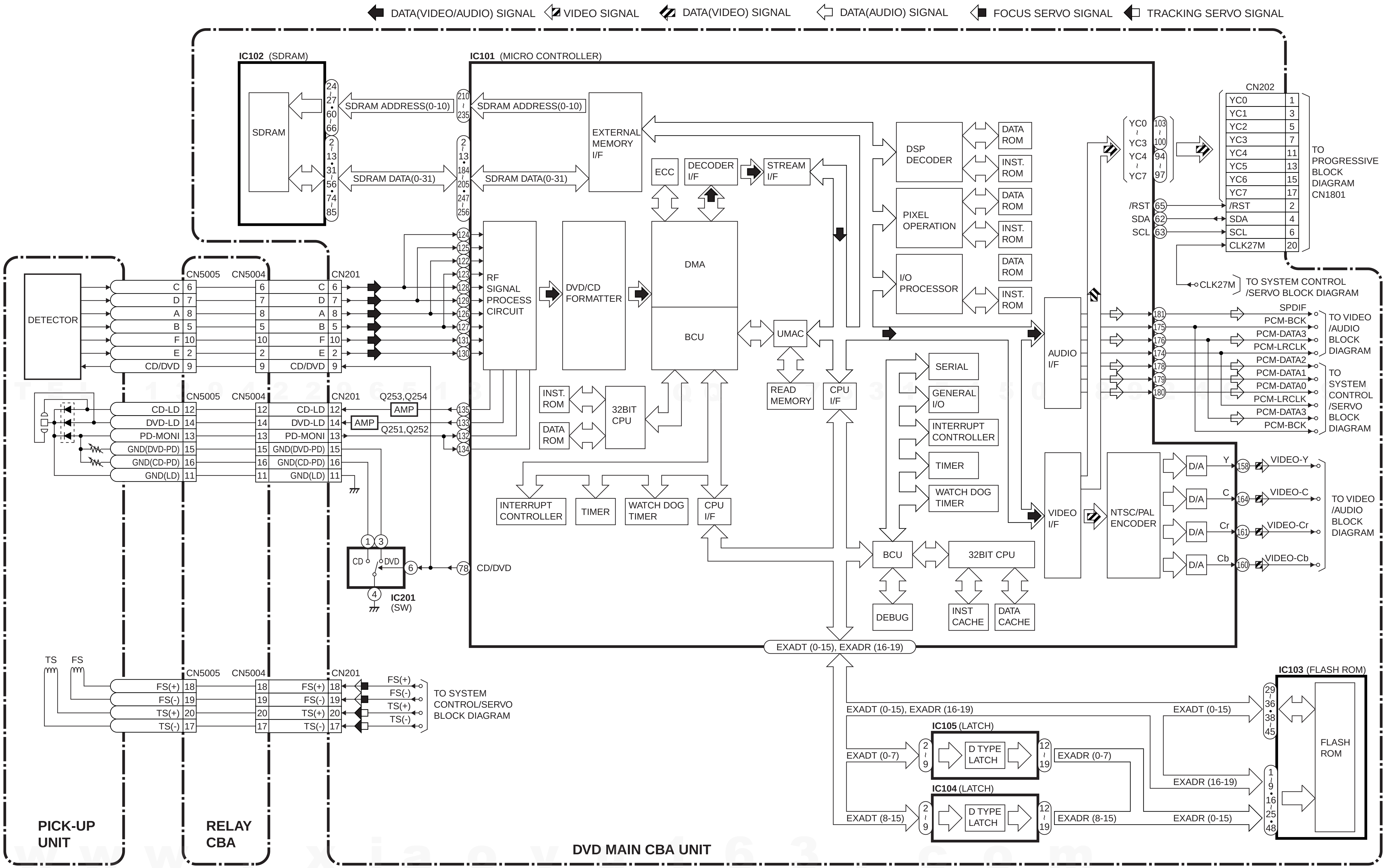
- No → Check each line and service it if defective.

# BLOCK DIAGRAMS

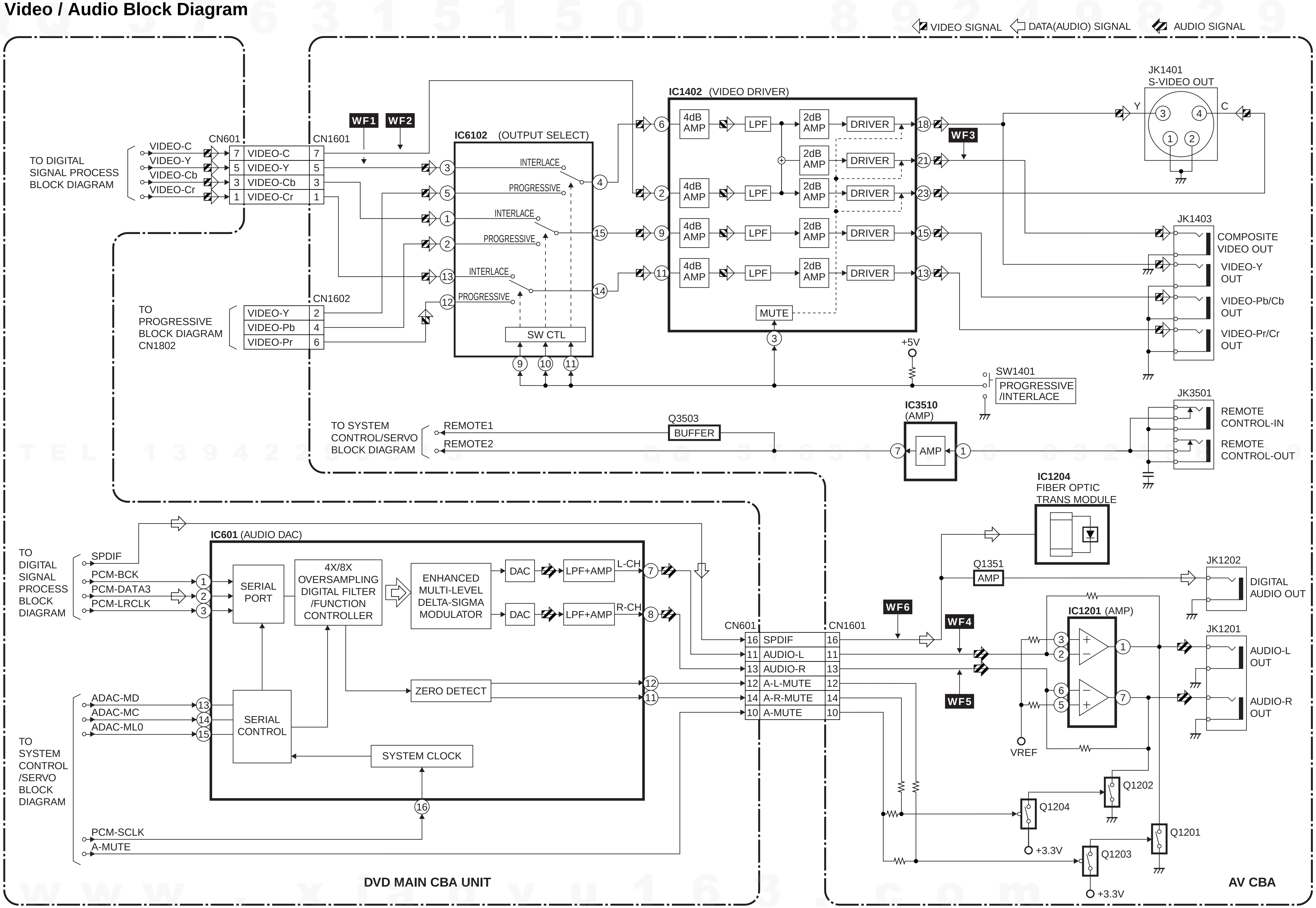
## System Control/Servo Block Diagram



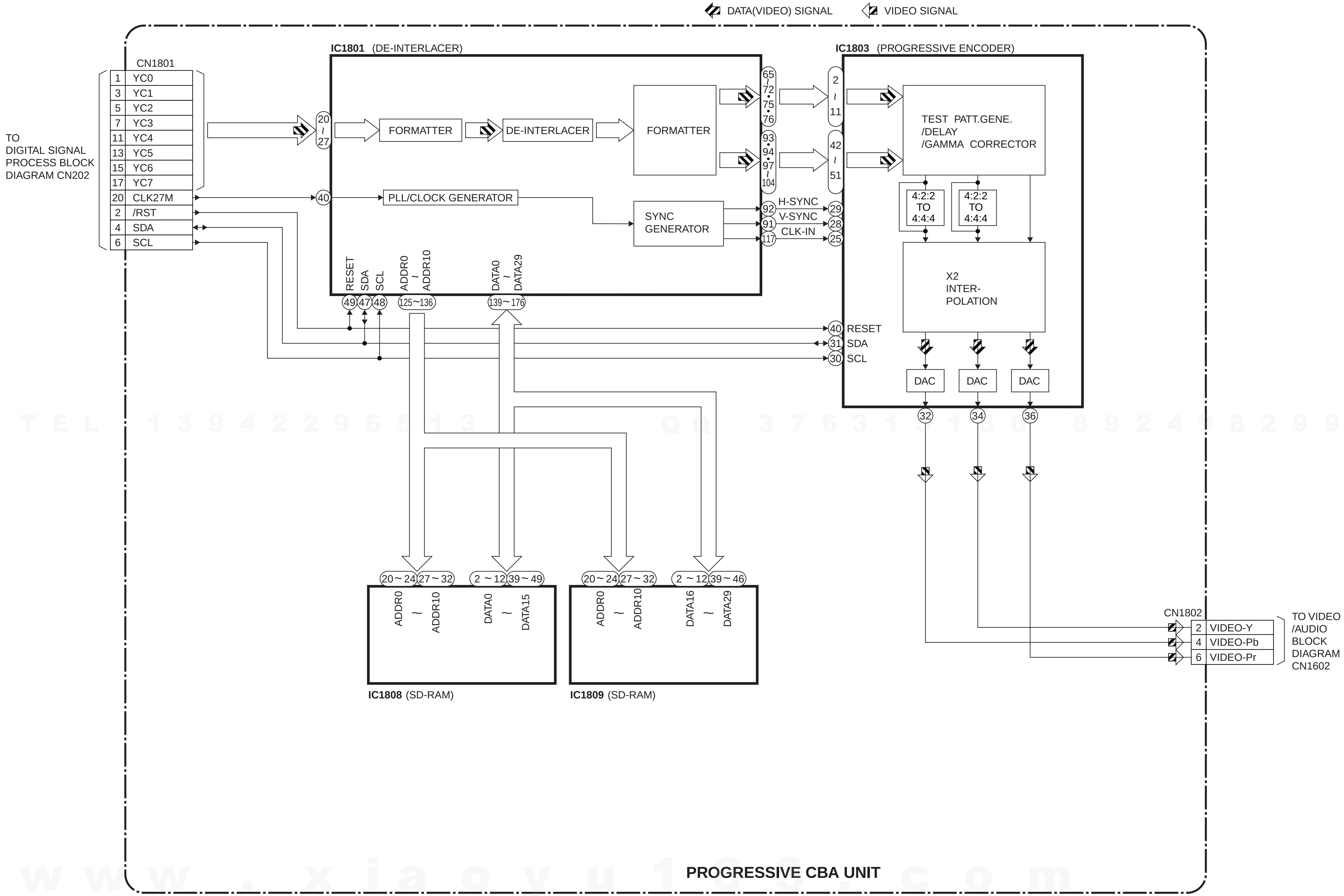
# Digital Signal Process Block Diagram



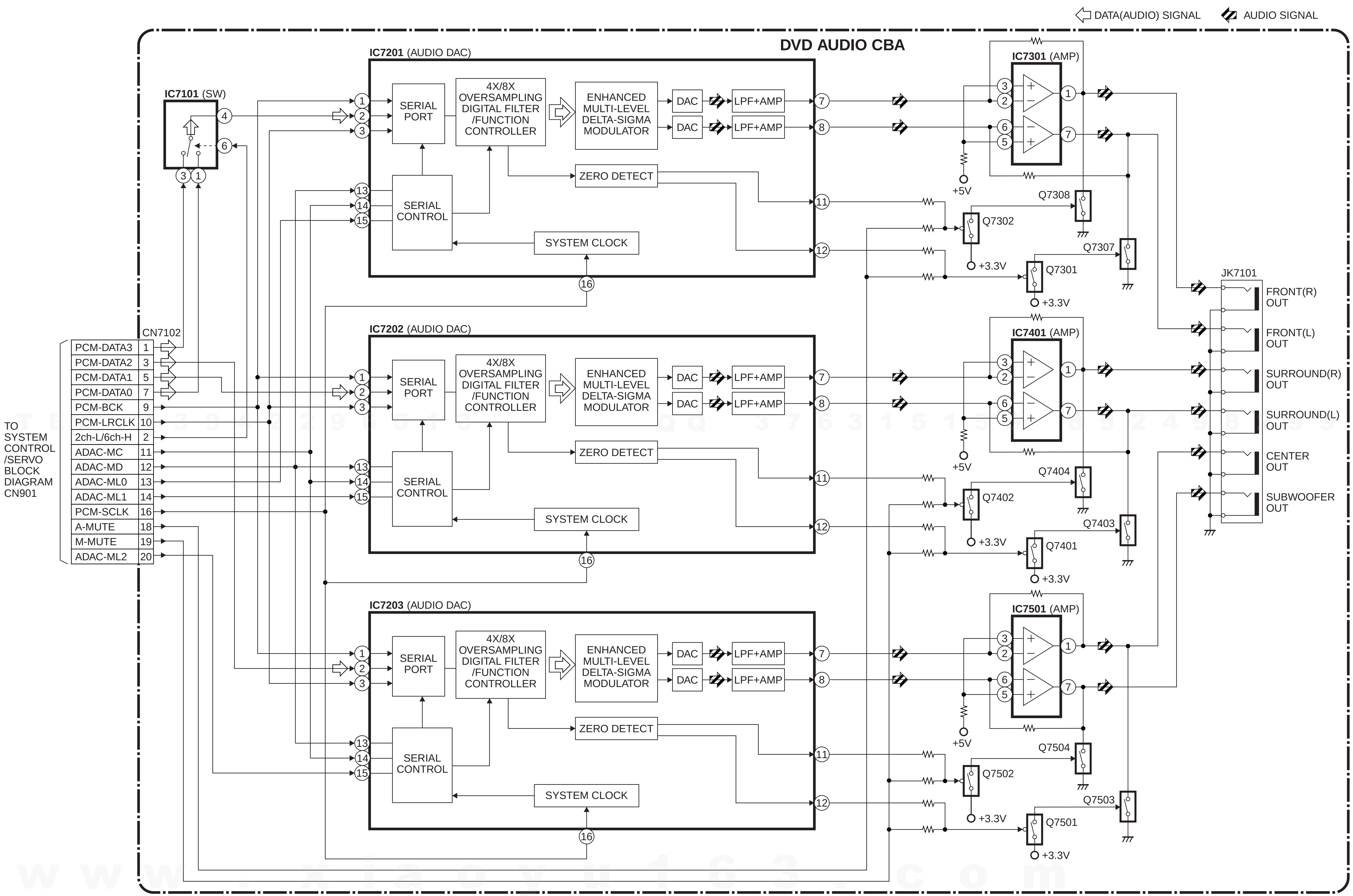
## Video / Audio Block Diagram



## Progressive Block Diagram



## DVD Audio Block Diagram

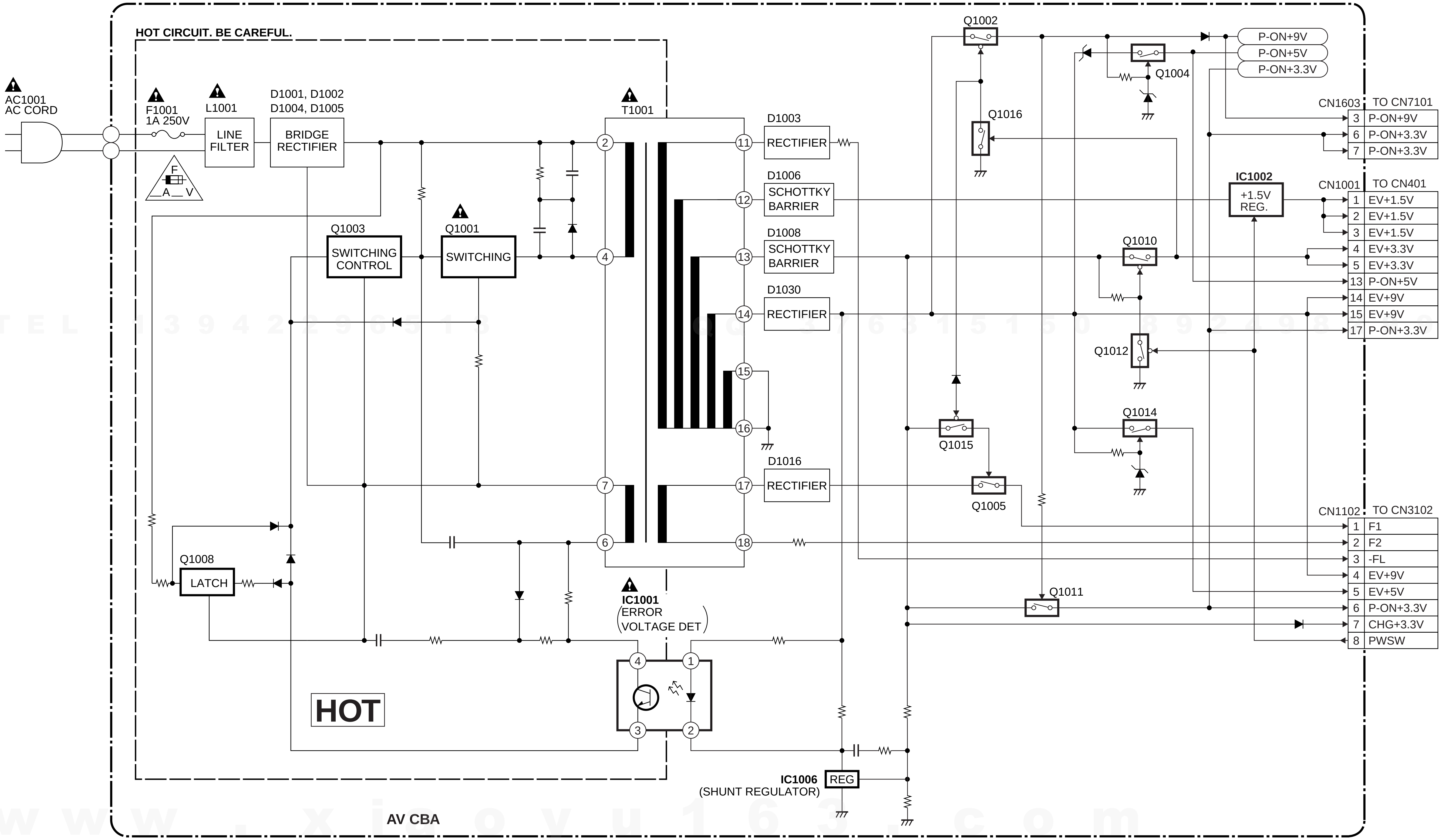


## Power Supply Block Diagram

**CAUTION !**
Fixed voltage ( or Auto voltage selectable ) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

**CAUTION**
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MEMO TYPE.
**RISK OF FIRE** -REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



# SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

## Standard Notes

## WARNING

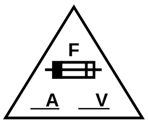
Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " # " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

## Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in $\mu F$ ($P=10^{-6}$ $\mu F$).
5. All voltages are DC voltages unless otherwise specified.

**LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:**

**1. CAUTION:**




FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.



This symbol means fast operating fuse.
Ce symbole reprèsente un fusible à fusion rapide.

**2. CAUTION:**

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

**3. Note:**

(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

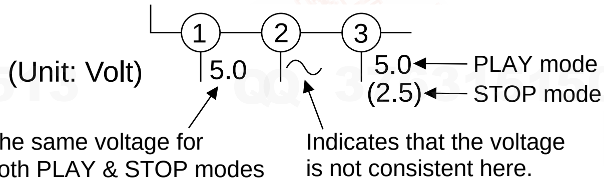
(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

**4. Wire Connectors**

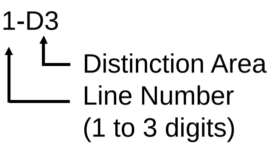
(1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).

(2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

**5. Voltage indications for PLAY and STOP mode on the schematics are as shown below:**

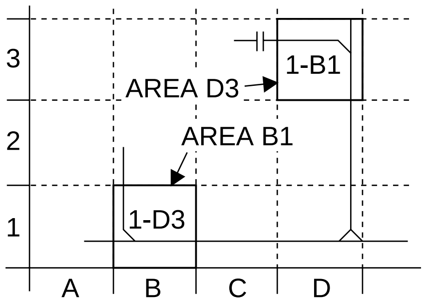



**6. How to read converged lines**

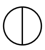


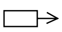

Examples:

1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".




**7. Test Point Information**

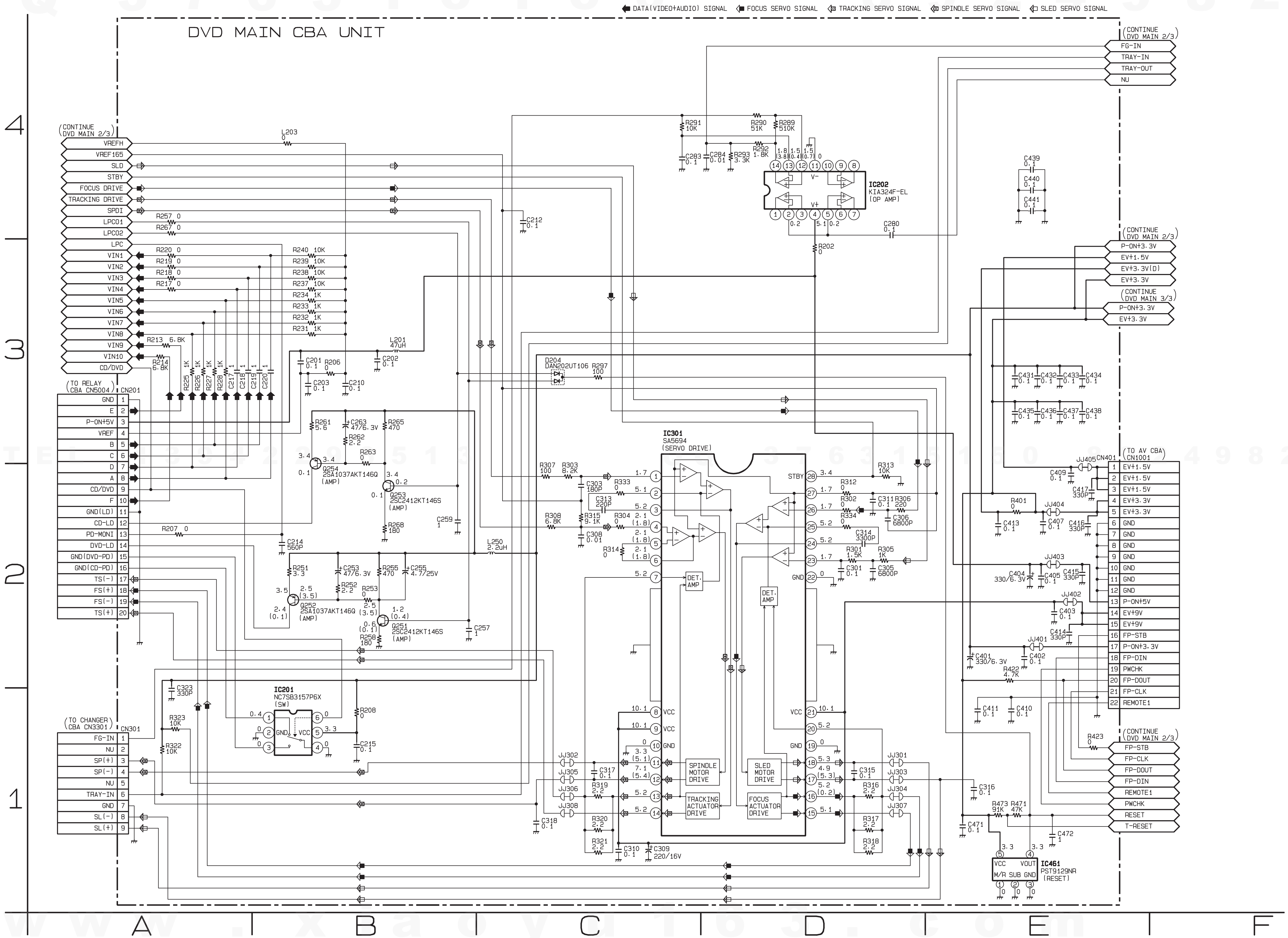
 : Indicates a test point with a jumper wire across a hole in the PCB.

 : Used to indicate a test point with a component lead on foil side.

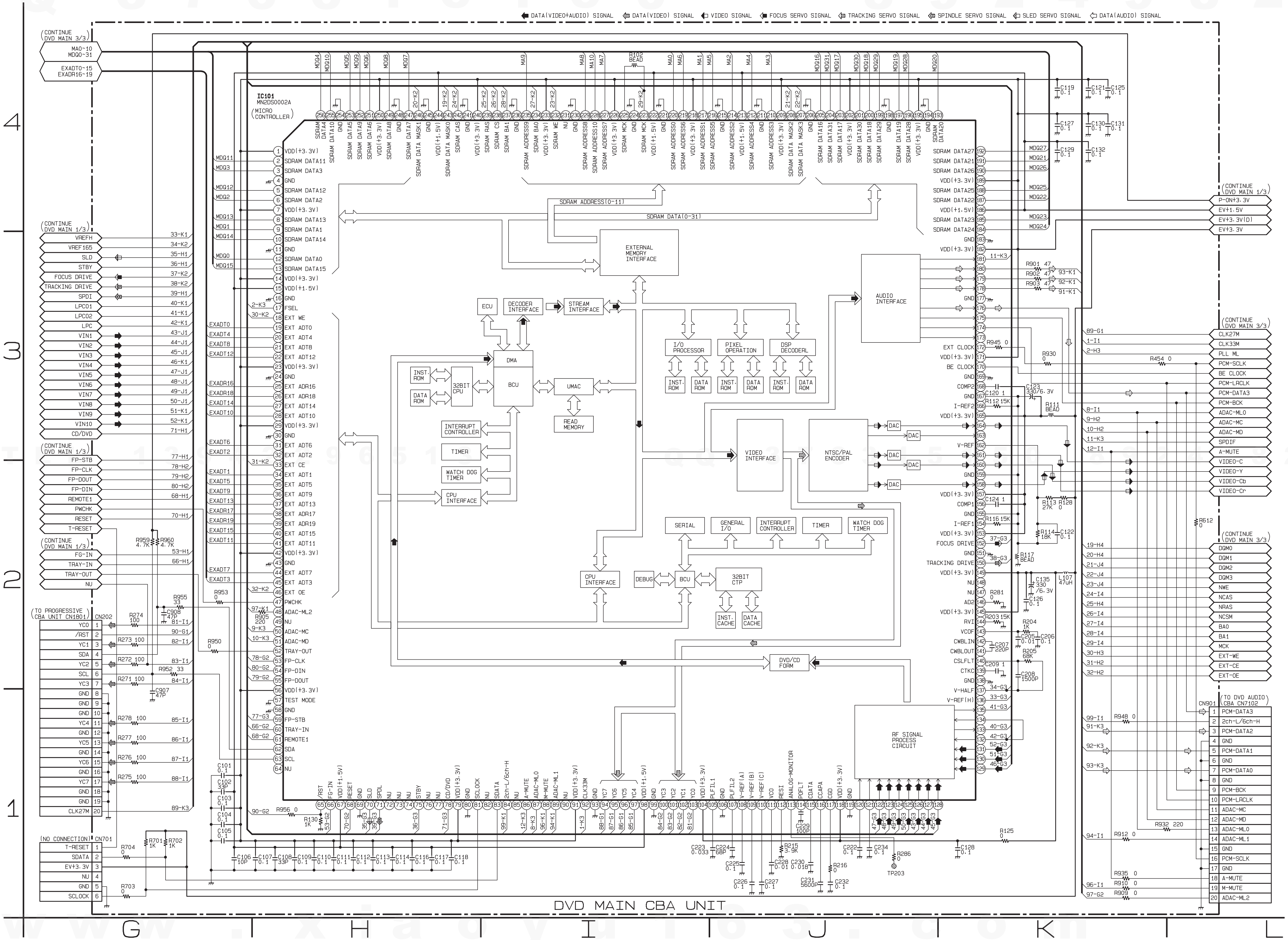
 : Used to indicate a test point with no test pin.

 : Used to indicate a test point with a test pin.

## DVD Main 1/3 Schematic Diagram



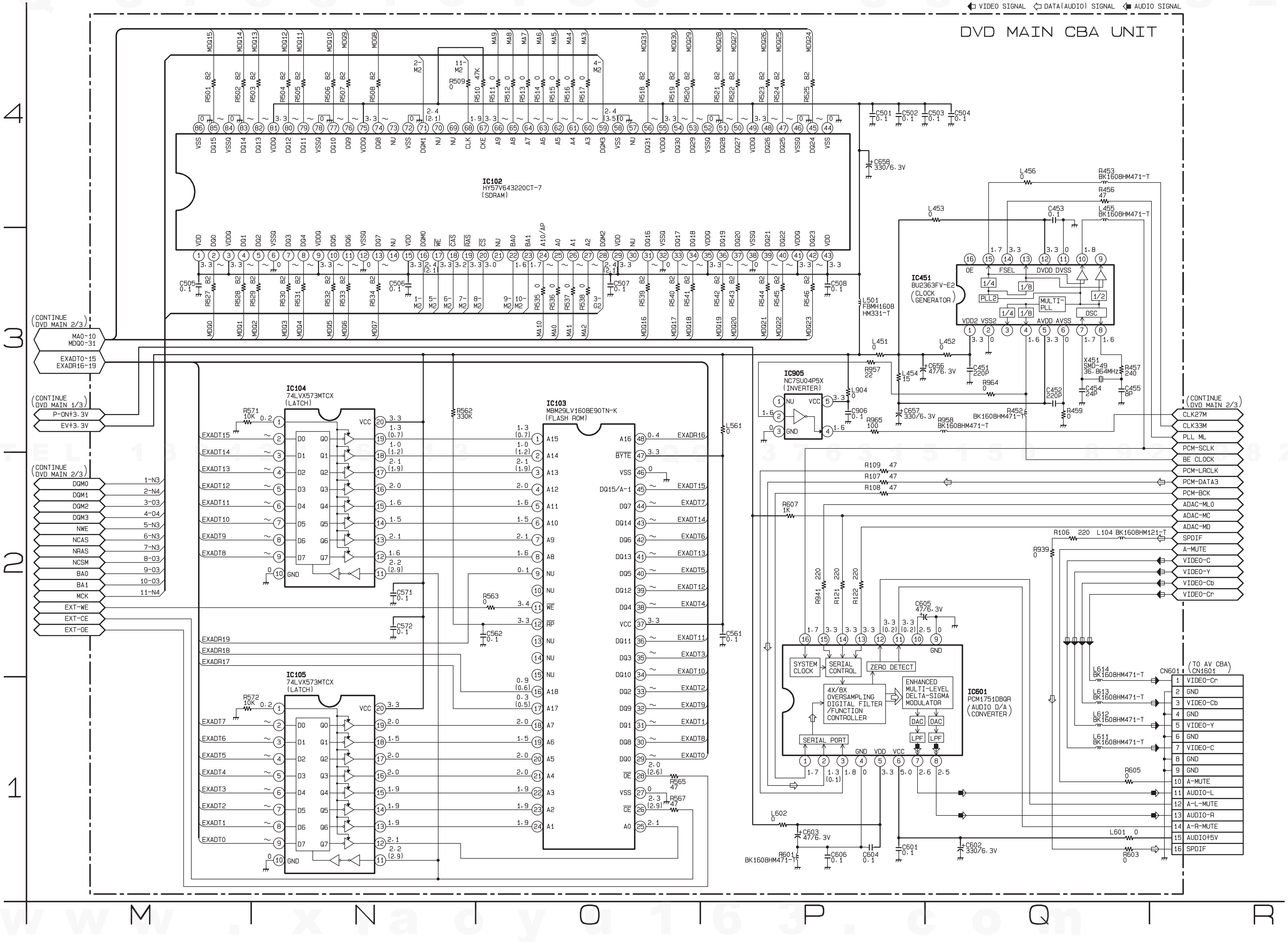
## DVD Main 2/3 Schematic Diagram



## IC101 VOLTAGE CHART

| PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP | PIN.NO | PLAY | STOP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.3 | 3.3 | 33 | 2.2 | 2.9 | 65 | 0.1 | 0.1 | 97 | 1.4 | 1.4 | 129 | 2.0 | 2.0 | 161 | 0.5 | 0.5 | 193 | ~ | ~ | 225 | 1.9 | 1.9 |
| 2 | ~ | ~ | 34 | ~ | ~ | 66 | 1.2 | 2.5 | 98 | 1.6 | 1.6 | 130 | 2.2 | 2.2 | 162 | 1.4 | 1.4 | 194 | 0 | 0 | 226 | 3.3 | 3.3 |
| 3 | ~ | ~ | 35 | ~ | ~ | 67 | 1.6 | 1.6 | 99 | 0 | 0 | 131 | 2.3 | 2.3 | 163 | ----- | ----- | 195 | 3.3 | 3.3 | 227 | ~ | ~ |
| 4 | 0 | 0 | 36 | ~ | ~ | 68 | 3.4 | 3.4 | 100 | 1.1 | 1.1 | 132 | 0.4 | 0.1 | 164 | 0.9 | 0.9 | 196 | ~ | ~ | 228 | ~ | ~ |
| 5 | ~ | ~ | 37 | ~ | ~ | 69 | 0 | 0 | 101 | 1.3 | 1.3 | 133 | 1.2 | 0.4 | 165 | 3.3 | 3.3 | 197 | ~ | ~ | 229 | ~ | ~ |
| 6 | ~ | ~ | 38 | 0.3 | 0.5 | 70 | 1.7 | 1.7 | 102 | 1.2 | 1.2 | 134 | 0.4 | 0.1 | 166 | 1.5 | 1.5 | 198 | 0 | 0 | 230 | 0 | 0 |
| 7 | 3.3 | 3.3 | 39 | 0.1 | 0.1 | 71 | 2.4 | 1.7 | 103 | 1.2 | 1.2 | 135 | 0.2 | 0.2 | 167 | 0 | 0 | 199 | ~ | ~ | 231 | ----- | ----- |
| 8 | ~ | ~ | 40 | ~ | ~ | 72 | ----- | ----- | 104 | 3.3 | 3.3 | 136 | 2.3 | 2.3 | 168 | 2.1 | 2.1 | 200 | ~ | ~ | 232 | 3.3 | 3.3 |
| 9 | ~ | ~ | 41 | ~ | ~ | 73 | ----- | ----- | 105 | 0.9 | 0.9 | 137 | 1.7 | 1.7 | 169 | 0 | 0 | 201 | ~ | ~ | 233 | 3.3 | 3.3 |
| 10 | ~ | ~ | 42 | 3.3 | 3.3 | 74 | ----- | ----- | 106 | 0 | 0 | 138 | 0 | 0 | 170 | 0.8 | 0.8 | 202 | 3.3 | 3.3 | 234 | 1.6 | 1.6 |
| 11 | 0 | 0 | 43 | 0 | 0 | 75 | 3.4 | 3.4 | 107 | 0.8 | 0.8 | 139 | 1.7 | 1.7 | 171 | 3.3 | 3.3 | 203 | ~ | ~ | 235 | ~ | ~ |
| 12 | ~ | ~ | 44 | ~ | ~ | 76 | ----- | ----- | 108 | 1.6 | 1.6 | 140 | 1.7 | 1.7 | 172 | 1.6 | 1.6 | 204 | ~ | ~ | 236 | 0 | 0 |
| 13 | ~ | ~ | 45 | ~ | ~ | 77 | ----- | ----- | 109 | 2.1 | 2.1 | 141 | 1.7 | 1.7 | 173 | ----- | ----- | 205 | ~ | ~ | 237 | 1.7 | 1.7 |
| 14 | 3.3 | 3.3 | 46 | 2.0 | 2.6 | 78 | 0.1 | 0.1 | 110 | 2.6 | 2.6 | 142 | 1.7 | 1.7 | 174 | 1.8 | 1.8 | 206 | 0 | 0 | 238 | 3.0 | 3.0 |
| 15 | 1.5 | 1.5 | 47 | 3.4 | 3.4 | 79 | 3.3 | 3.3 | 111 | 2.0 | 2.0 | 143 | 0.5 | 0.5 | 175 | 1.7 | 1.7 | 207 | 2.4 | 3.5 | 239 | 3.3 | 3.3 |
| 16 | 0 | 0 | 48 | 3.6 | 3.6 | 80 | 0 | 0 | 112 | 0.7 | 0.9 | 144 | 1.6 | 1.6 | 176 | 1.4 | 0.1 | 208 | 2.4 | 2.1 | 240 | 3.3 | 3.3 |
| 17 | 3.4 | 3.4 | 49 | ----- | ----- | 81 | 3.3 | 3.3 | 113 | 2.1 | 2.1 | 145 | 3.3 | 3.3 | 177 | 0 | 0 | 209 | 3.3 | 3.3 | 241 | 0 | 0 |
| 18 | 3.4 | 3.4 | 50 | 3.4 | 3.4 | 82 | ----- | ----- | 114 | 1.8 | 1.8 | 146 | 1.8 | 1.8 | 178 | 0.9 | 0.1 | 210 | ~ | ~ | 242 | 3.2 | 3.2 |
| 19 | ~ | ~ | 51 | 3.4 | 3.4 | 83 | 3.4 | 3.4 | 115 | 1.4 | 1.4 | 147 | ----- | ----- | 179 | 1.4 | 0.1 | 211 | 0 | 0 | 243 | 2.4 | 2.1 |
| 20 | ~ | ~ | 52 | 3.4 | 3.4 | 84 | 2.4 | 2.4 | 116 | 0.3 | 0.3 | 148 | ----- | ----- | 180 | 1.4 | 0.1 | 212 | ~ | ~ | 244 | 1.5 | 1.5 |
| 21 | ~ | ~ | 53 | 3.4 | 3.4 | 85 | ----- | ----- | 117 | 1.6 | 1.6 | 149 | 3.3 | 3.3 | 181 | 1.7 | 1.7 | 213 | 1.5 | 1.5 | 245 | 0 | 0 |
| 22 | ~ | ~ | 54 | 3.4 | 3.4 | 86 | 3.4 | 0.1 | 118 | 3.3 | 3.3 | 150 | 1.7 | 1.7 | 182 | 3.3 | 3.3 | 214 | ~ | ~ | 246 | 2.4 | 2.1 |
| 23 | 3.3 | 3.3 | 55 | 3.3 | 3.3 | 87 | 3.4 | 3.4 | 119 | 0 | 0 | 151 | 0 | 0 | 183 | 0 | 0 | 215 | 0 | 0 | 247 | ~ | ~ |
| 24 | 0 | 0 | 56 | 3.3 | 3.3 | 88 | 0.1 | 0.1 | 120 | 1.9 | 1.9 | 152 | 1.7 | 1.7 | 184 | ~ | ~ | 216 | ~ | ~ | 248 | 0 | 0 |
| 25 | 0.4 | 0.4 | 57 | 0 | 0 | 89 | 3.4 | 3.4 | 121 | 1.9 | 1.9 | 153 | 3.3 | 3.3 | 185 | ~ | ~ | 217 | ~ | ~ | 249 | ~ | ~ |
| 26 | 0.9 | 0.6 | 58 | 0 | 0 | 90 | ----- | ----- | 122 | 2.4 | 2.4 | 154 | 1.4 | 1.4 | 186 | 1.5 | 1.5 | 218 | 3.3 | 3.3 | 250 | 3.3 | 3.3 |
| 27 | ~ | ~ | 59 | 3.3 | 3.3 | 91 | 3.3 | 3.3 | 123 | 2.4 | 2.4 | 155 | 0 | 0 | 187 | ~ | ~ | 219 | ~ | ~ | 251 | ~ | ~ |
| 28 | ~ | ~ | 60 | 3.4 | 3.4 | 92 | 1.7 | 1.5 | 124 | 2.4 | 2.4 | 156 | 2.2 | 2.2 | 188 | ~ | ~ | 220 | ~ | ~ | 252 | ~ | ~ |
| 29 | 3.3 | 3.3 | 61 | 3.1 | 3.1 | 93 | 0 | 0 | 125 | 2.4 | 2.4 | 157 | 3.3 | 3.3 | 189 | 3.3 | 3.3 | 221 | 0 | 0 | 253 | ~ | ~ |
| 30 | 0 | 0 | 62 | 3.3 | 3.3 | 94 | 2.0 | 2.0 | 126 | 2.0 | 2.0 | 158 | 0.7 | 0.7 | 190 | ~ | ~ | 222 | 1.5 | 1.5 | 254 | 0 | 0 |
| 31 | ~ | ~ | 63 | 3.3 | 3.3 | 95 | 1.3 | 1.3 | 127 | 2.0 | 2.0 | 159 | 0 | 0 | 191 | ~ | ~ | 223 | 1.9 | 1.9 | 255 | ~ | ~ |
| 32 | ~ | ~ | 64 | ----- | ----- | 96 | 1.5 | 1.5 | 128 | 2.0 | 2.0 | 160 | 0.5 | 0.5 | 192 | ~ | ~ | 224 | 0 | 0 | 256 | ~ | ~ |

## DVD Main 3/3 Schematic Diagram

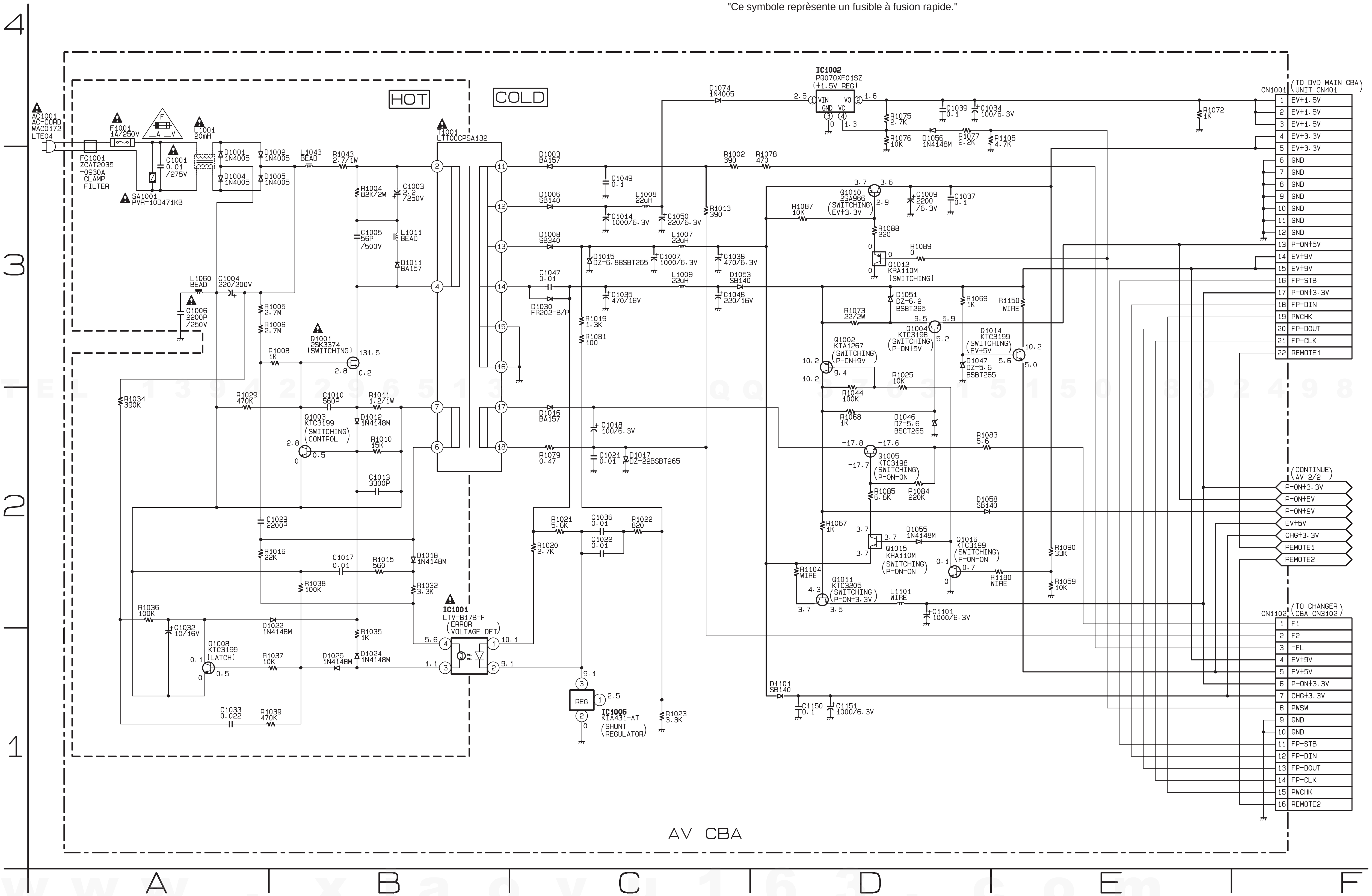


# AV 1/2 Schematic Diagram

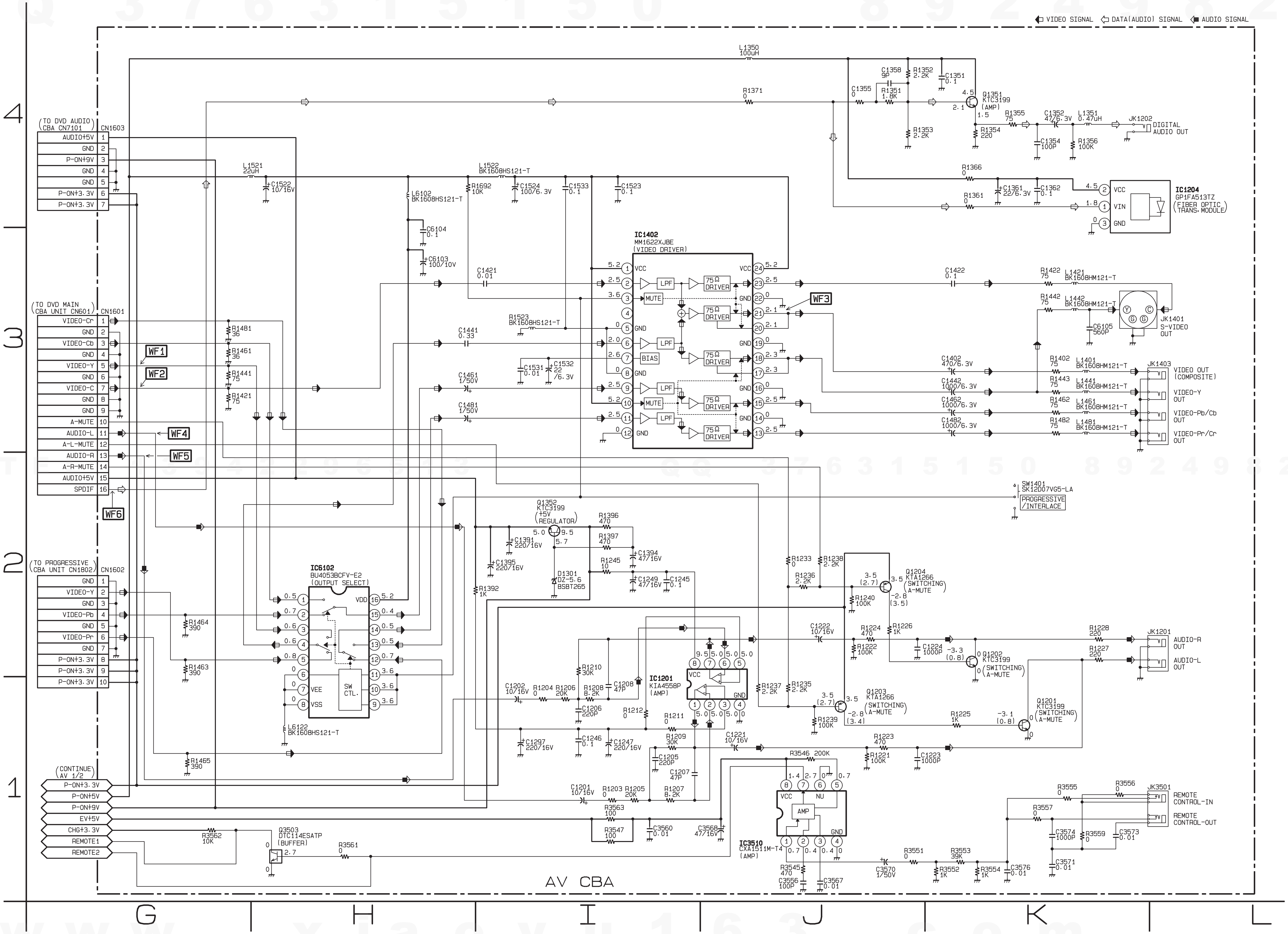
**CAUTION !**
Fixed voltage ( or Auto voltage selectable ) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

**CAUTION**
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
**RISK OF FIRE**-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

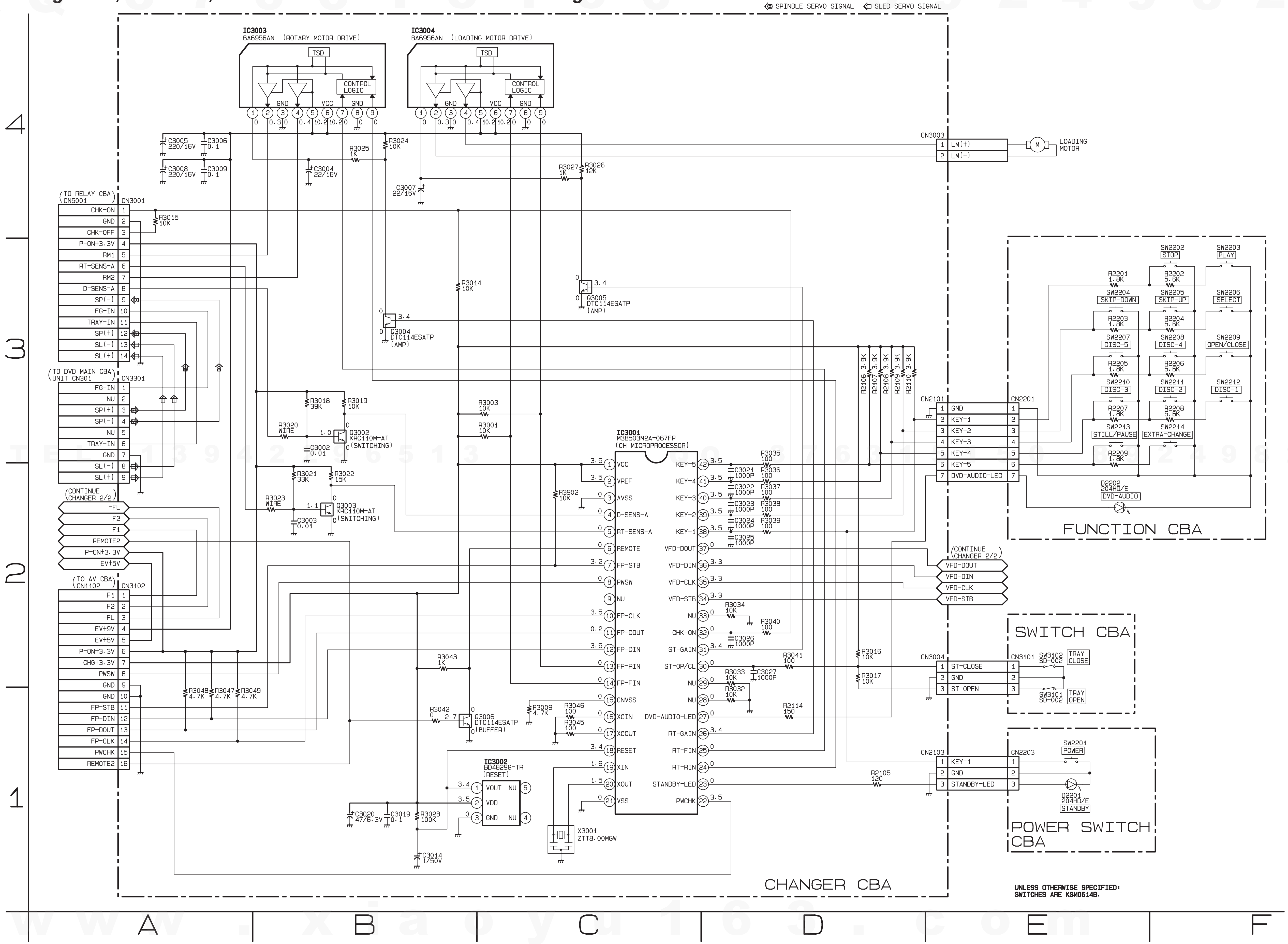
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



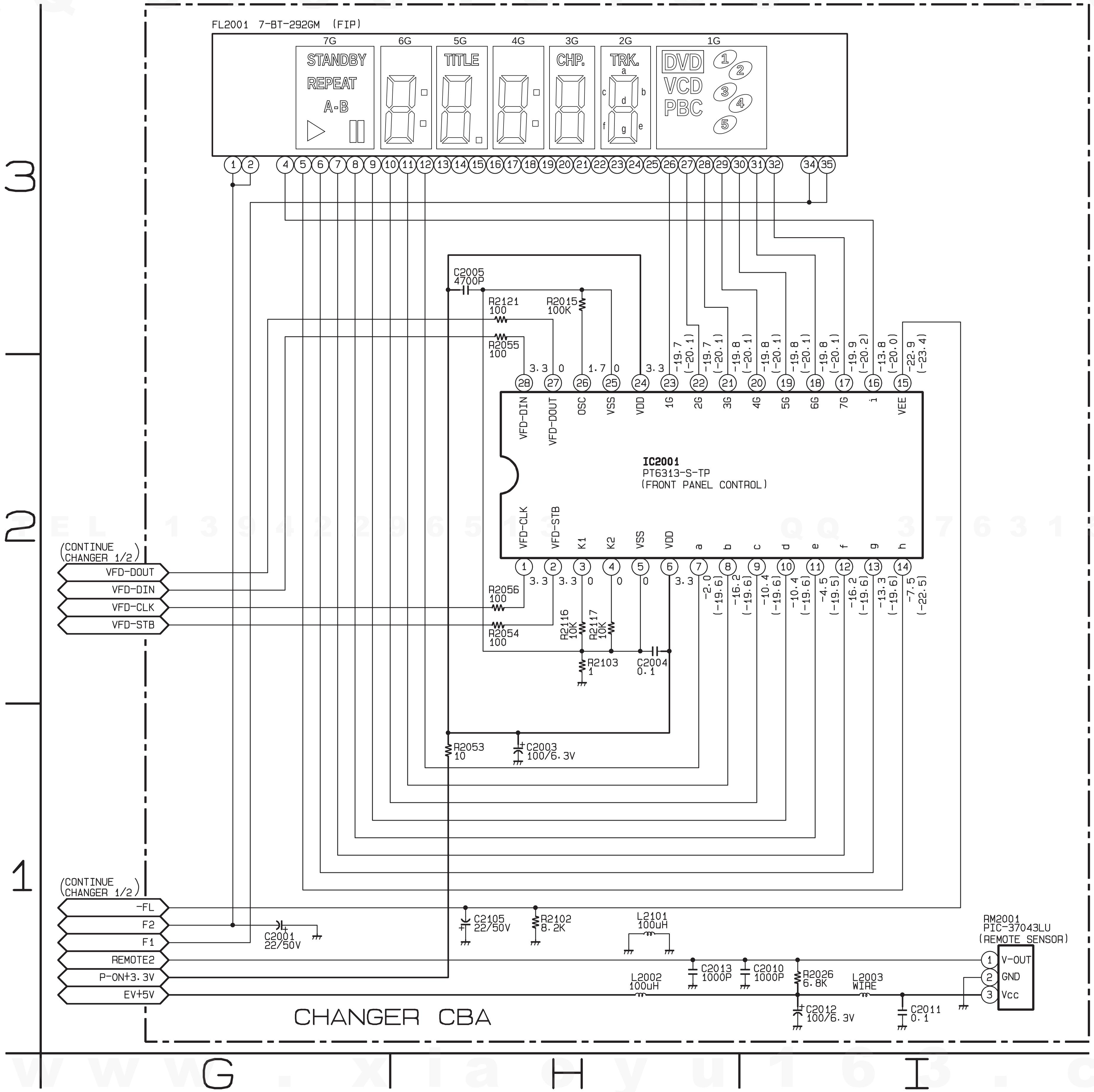
## AV 2/2 Schematic Diagram



# Changer 1/2, Function, Power Switch & Switch Schematic Diagram



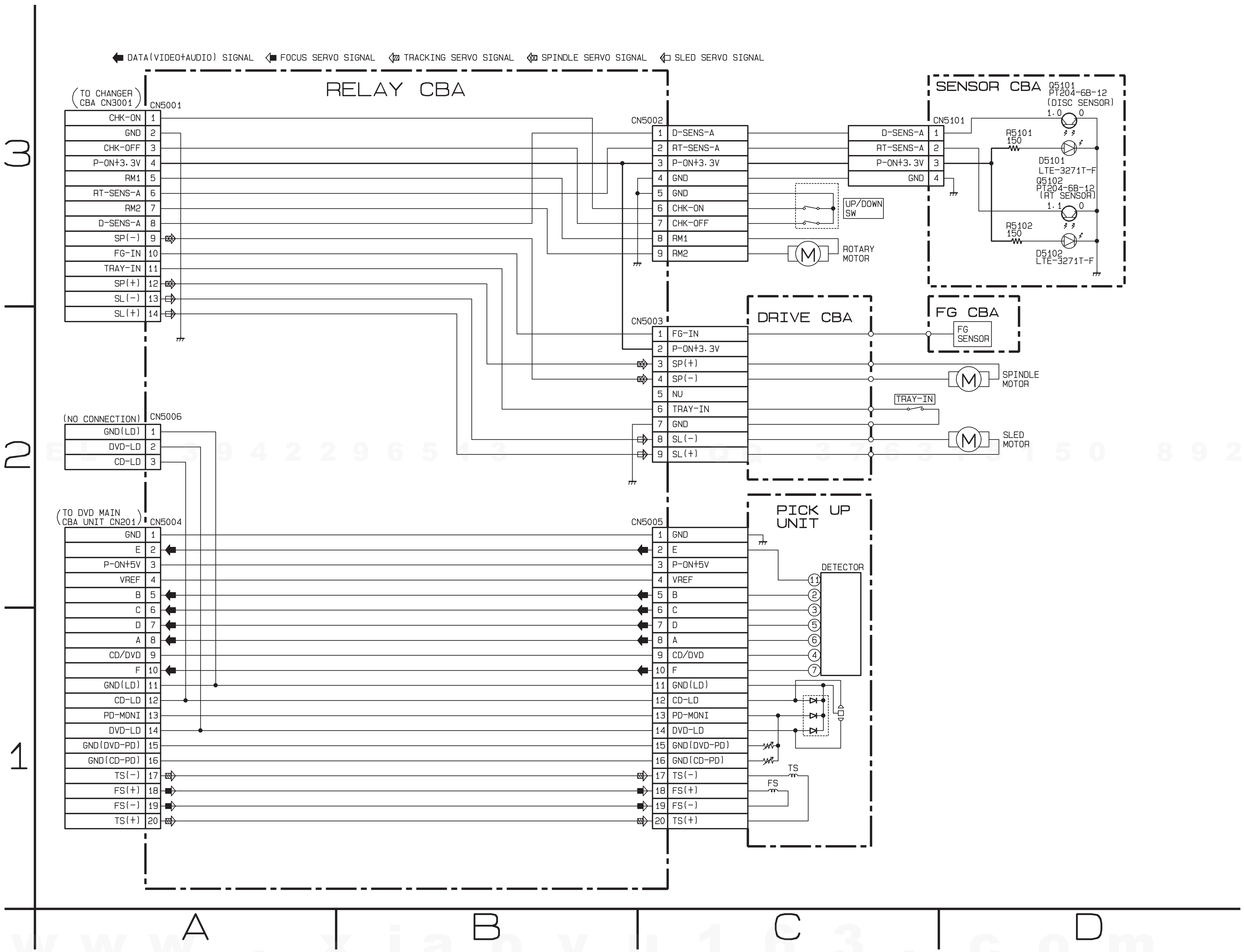
## Changer 2/2 Schematic Diagram



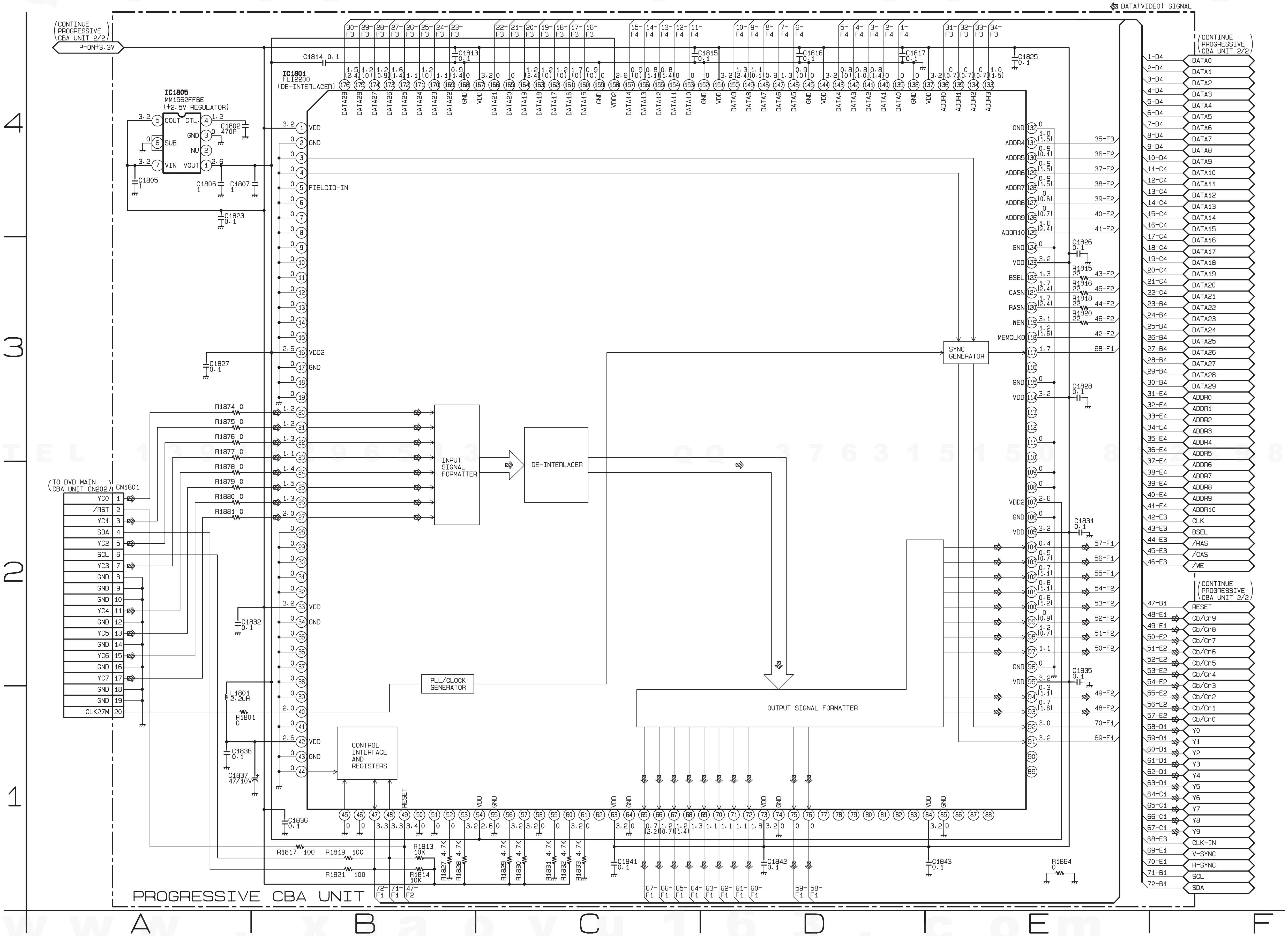

FL2001 MATRIX CHART

| | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|
| a | STANDBY | a | a | a | a | a | ① |
| b | REPEAT | b | b | b | b | b | ② |
| c | A | c | c | c | c | c | ③ |
| d | -B | d | d | d | d | d | ④ |
| e | ▷ | e | e | e | e | e | ⑤ |
| f | ‖ | f | f | f | f | f | DVD |
| g | —— | g | g | g | g | g | PBC |
| h | —— | : | TITLE | : | CHP. | TRK. | CD |
| i | —— | —— | □ | —— | —— | —— | V |

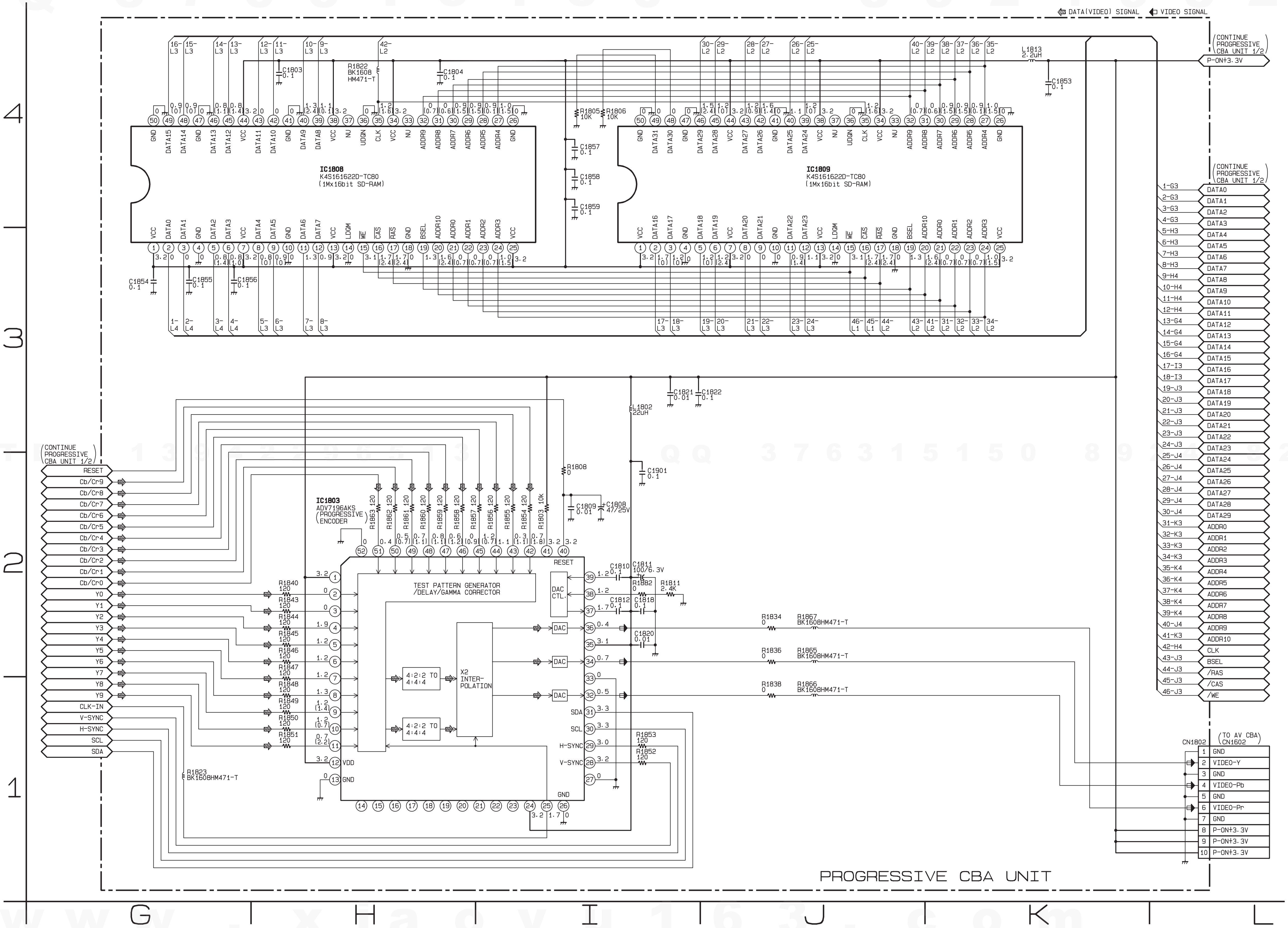
## Relay Schematic Diagram



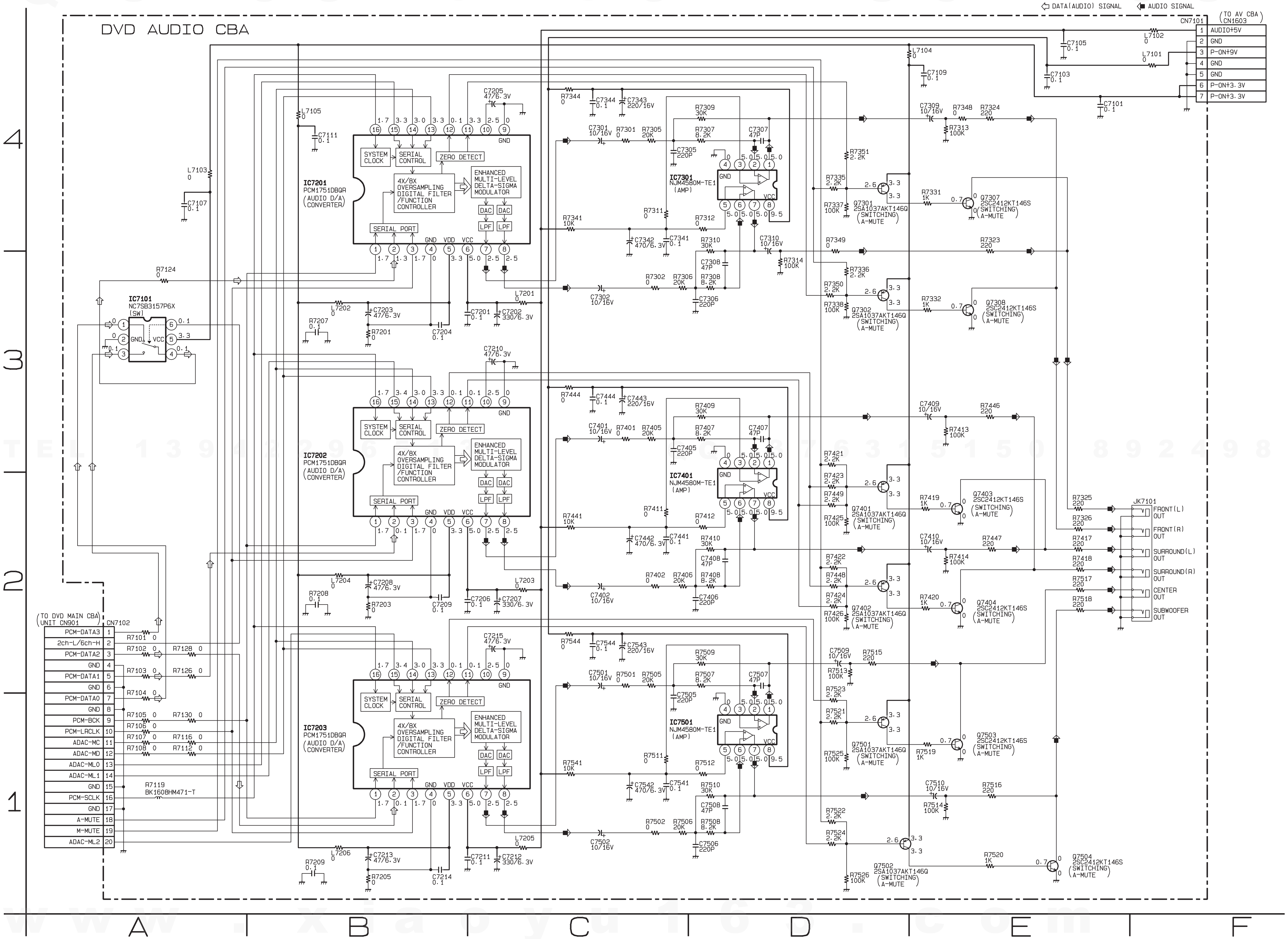
## Progressive 1/2 Schematic Diagram



# Progressive 2/2 Schematic Diagram

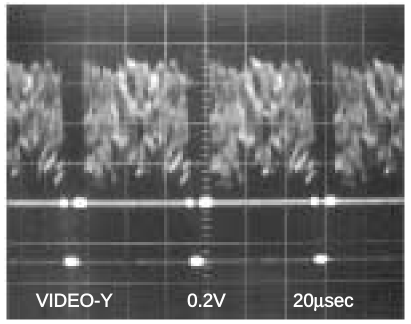


## DVD Audio Schematic Diagram

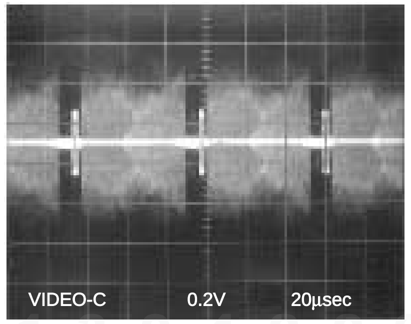


# WAVEFORMS

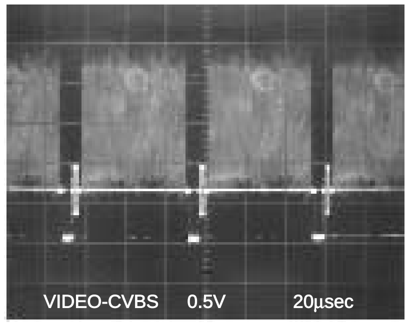
**WF1** Pin 5 of CN1601



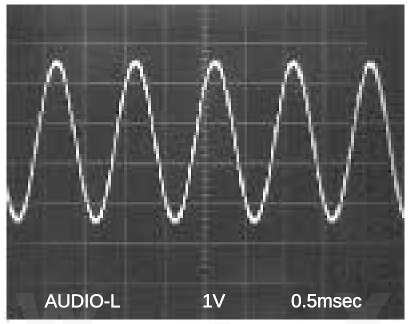

**WF2** Pin 7 of CN1601



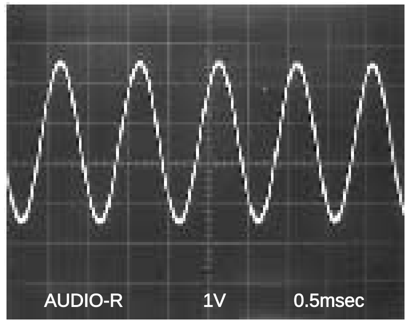

**WF3** Pin 21 of IC1402



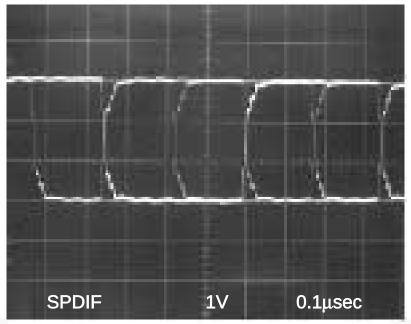

**WF4** Pin 11 of CN1601




**WF5** Pin 13 of CN1601

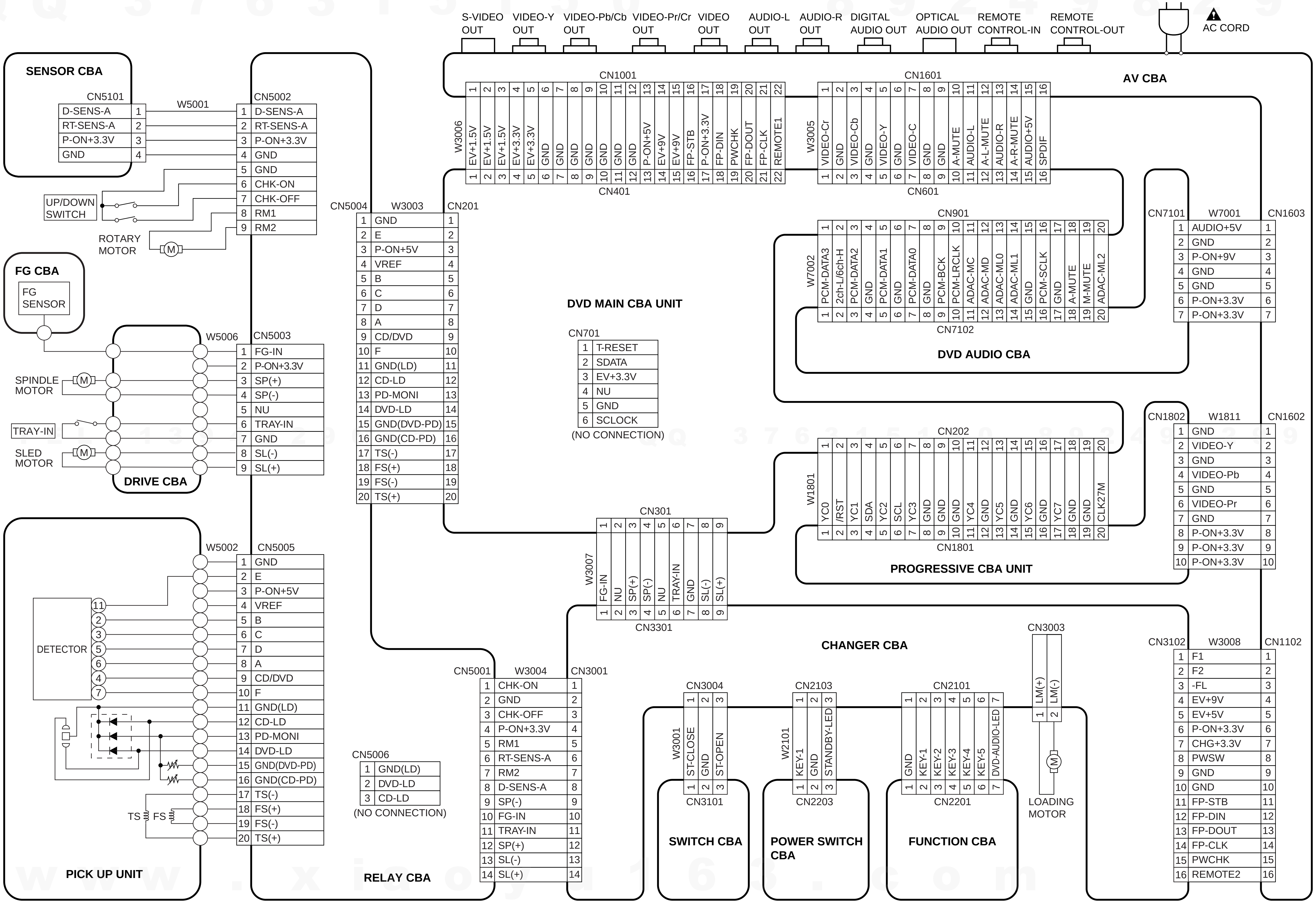



**WF6** Pin 16 of CN1601




**NOTE:**
Input
CD: 1kHz PLAY
(WF4~WF6)
DVD: POWER ON (STOP) MODE
(WF1~WF3)

# WIRING DIAGRAM



# FIRMWARE RENEWAL MODE

1. Turn the power on and remove the disc on the tray.
2. To put the DVD player into version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order. The tray will open automatically.
   Fig. a appears on the screen and Fig. b appears on the VFD.

```
F/W Version Up Mode

    Please insert a DISC
        for F/W Version Up.

                              EXIT: POWER
```

Fig. a Version Up Mode Screen

bE-UP

Fig. b VFD in Version Up Mode

The DVD player can also enter the version up mode with the tray open. In this case, Fig. a will be shown on the screen while the tray is open.

3. Load the disc for version up.
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen and Fig. d appears on the VFD.

```
F/W Version Up Mode

    VERSION :     ********
    Reading...(*2)

                              EXIT: POWER
```

Fig. c Programming Mode Screen

1.223

Fig. d VFD in Programming Mode (Example)

The appearance shown in (*2) of Fig. c is described as follows:

| No. | Appearance | State |
|---|---|---|
| 1 | Reading... | Sending files into the memory |
| 2 | Erasing... | Erasing previous version data |
| 3 | Programming... | Writing new version data |

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e appears on the VFD. (Fig. f)

```
F/W Version Up Mode

    VERSION :     ********
    Completed
    SUM : 7abc (*3)
```

Fig. e Completed Program Mode Screen

7AbC

Fig. f VFD upon Finishing the Programming Mode (Example)

At this time, no buttons are available.

6. Unplug the AC cord from the AC outlet. Then plug it again.
7. Turn the power on by pressing the power button and the tray will close.
8. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order.
   Fig. g appears on the screen.

```
model: ******      Ver: ****       Region: **
    1: VFD TEST
    2: TT REPEAT PLAY
    3: EEPROM CLEAR
    4: MEASUREMENT SERVO
    5: DISC READ CHECK
    6: MECHA CHECK
    7: DISC INFO
    8: ERROR RATE
RETURN: -----                      EXIT: POWER
```

Fig. g

9. Press [3] button on the remote control unit.
   Fig. h appears on the screen.

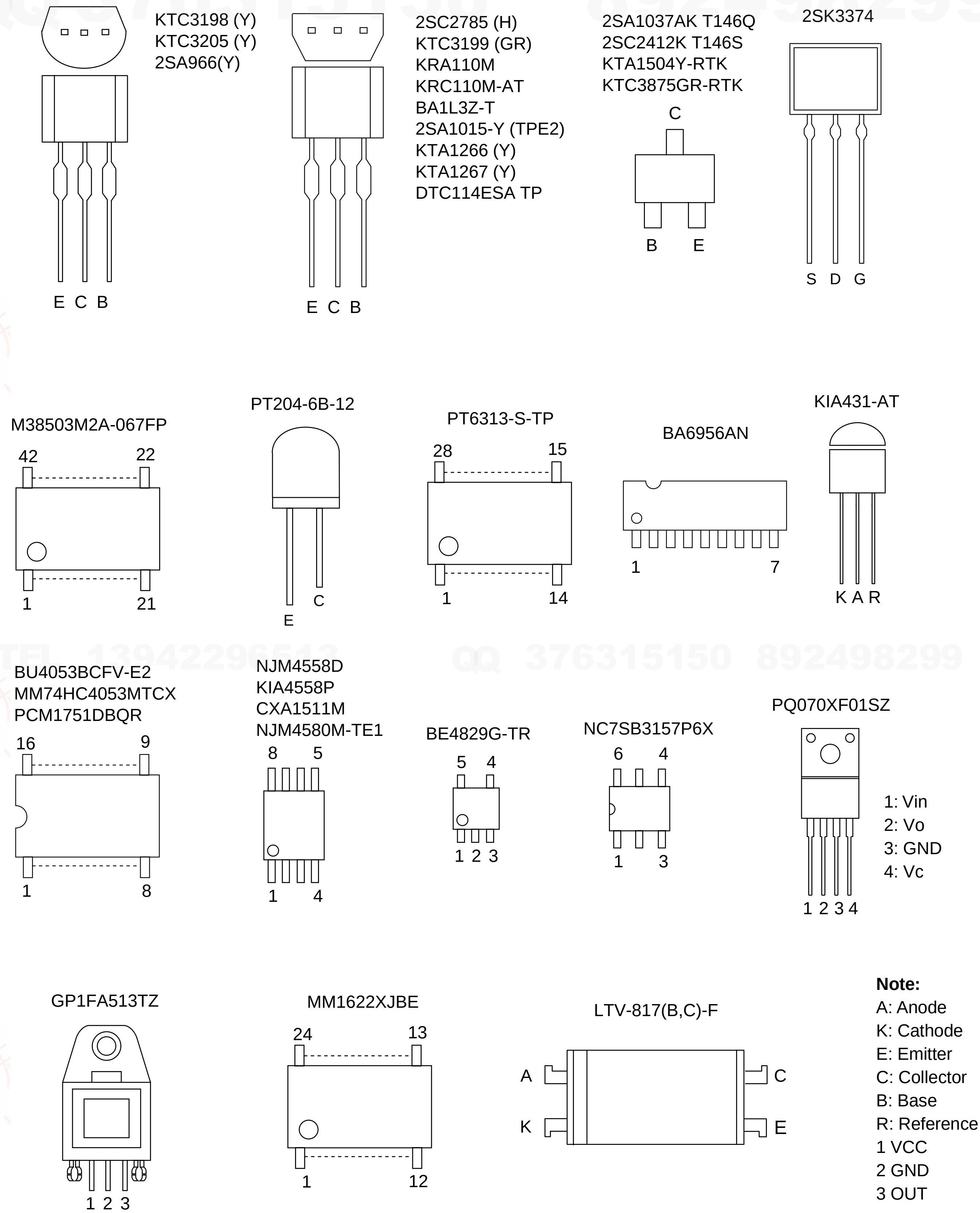
```
model: ******      Ver: ****       Region: **
TEST 3: EEPROM CLEAR
EEPROM CLEAR: OK

RETURN: -----                      EXIT: POWER
```

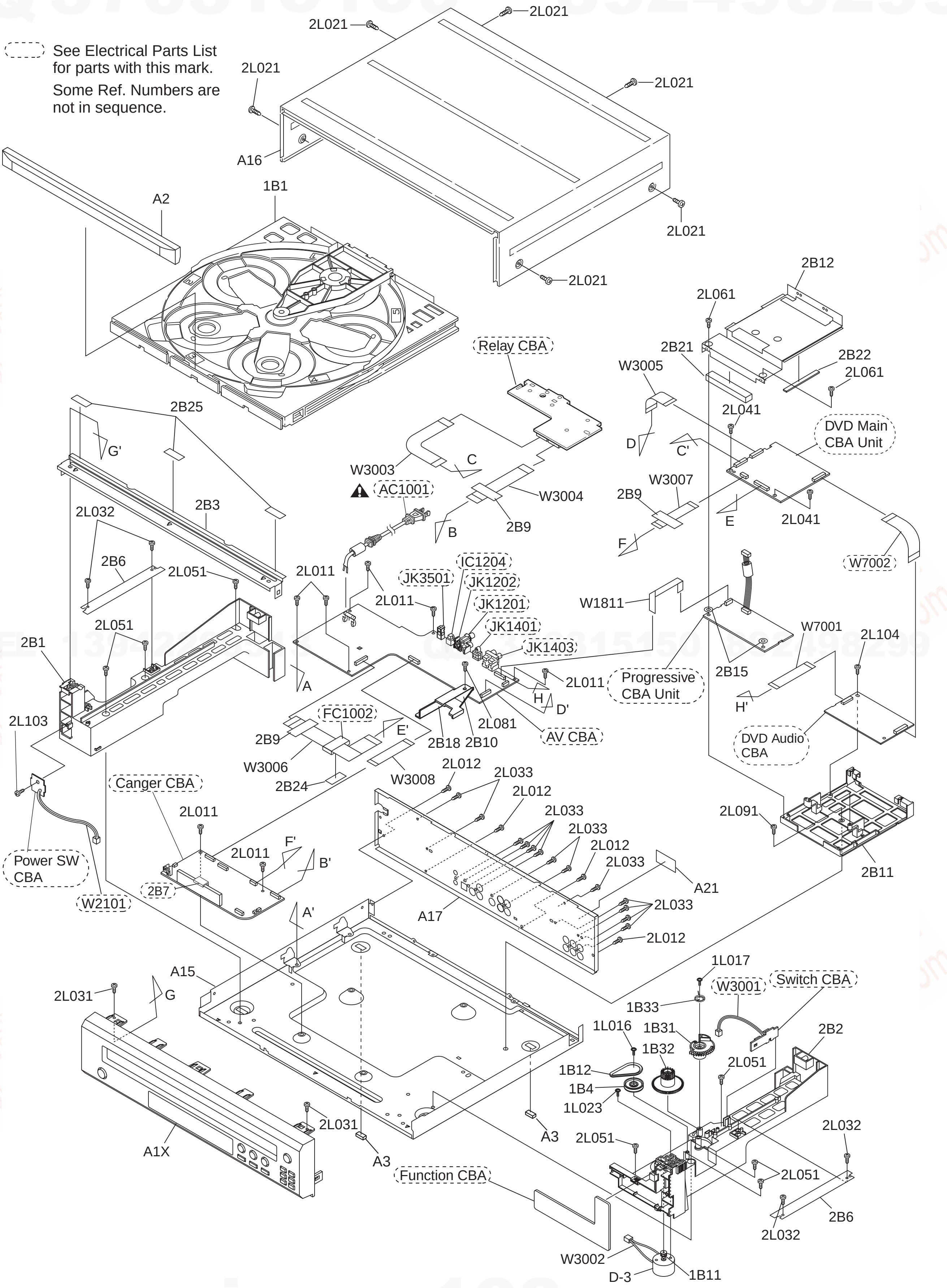
Fig. h

10. To exit this mode, press [POWER] button.

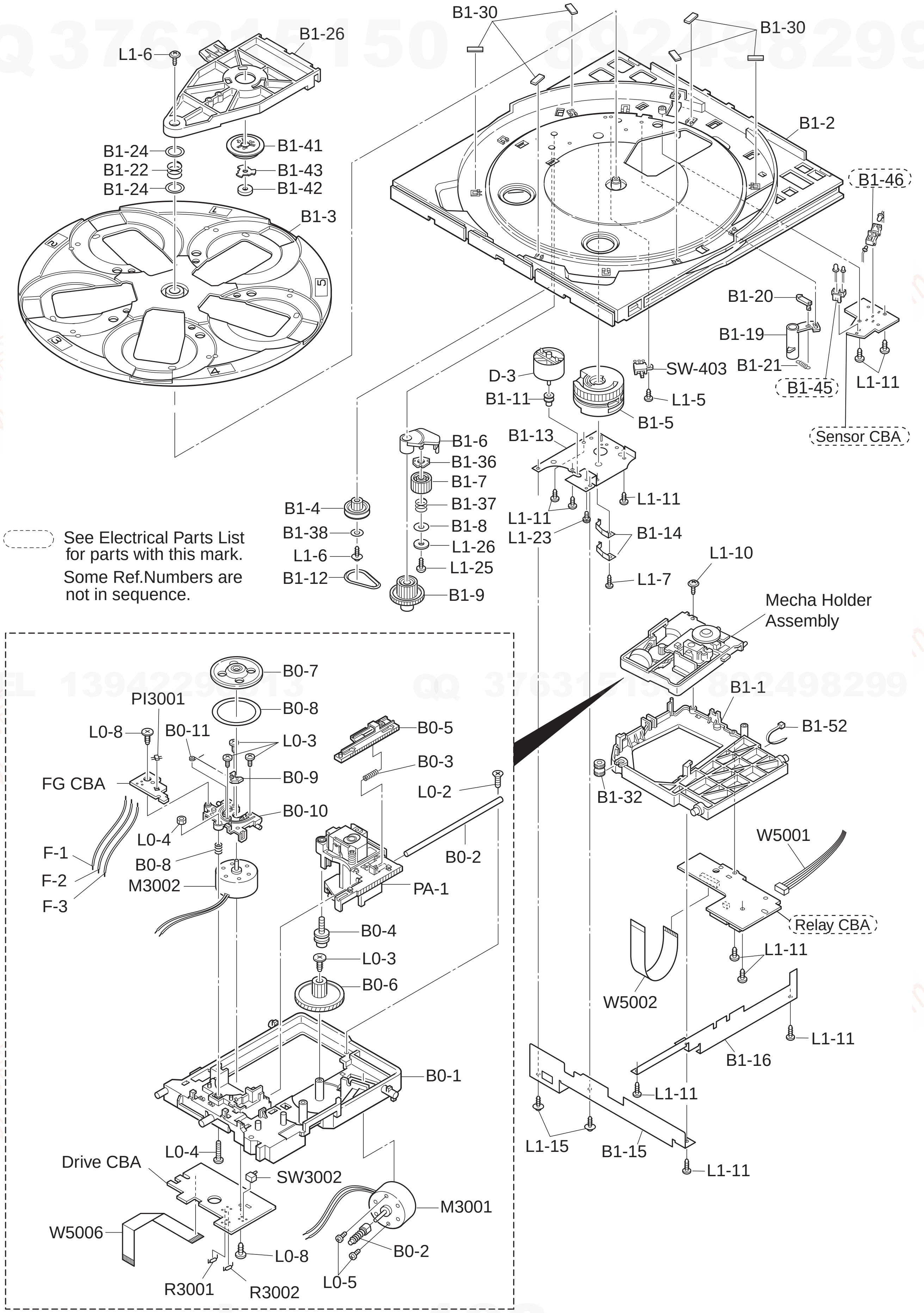
# LEAD IDENTIFICATIONS



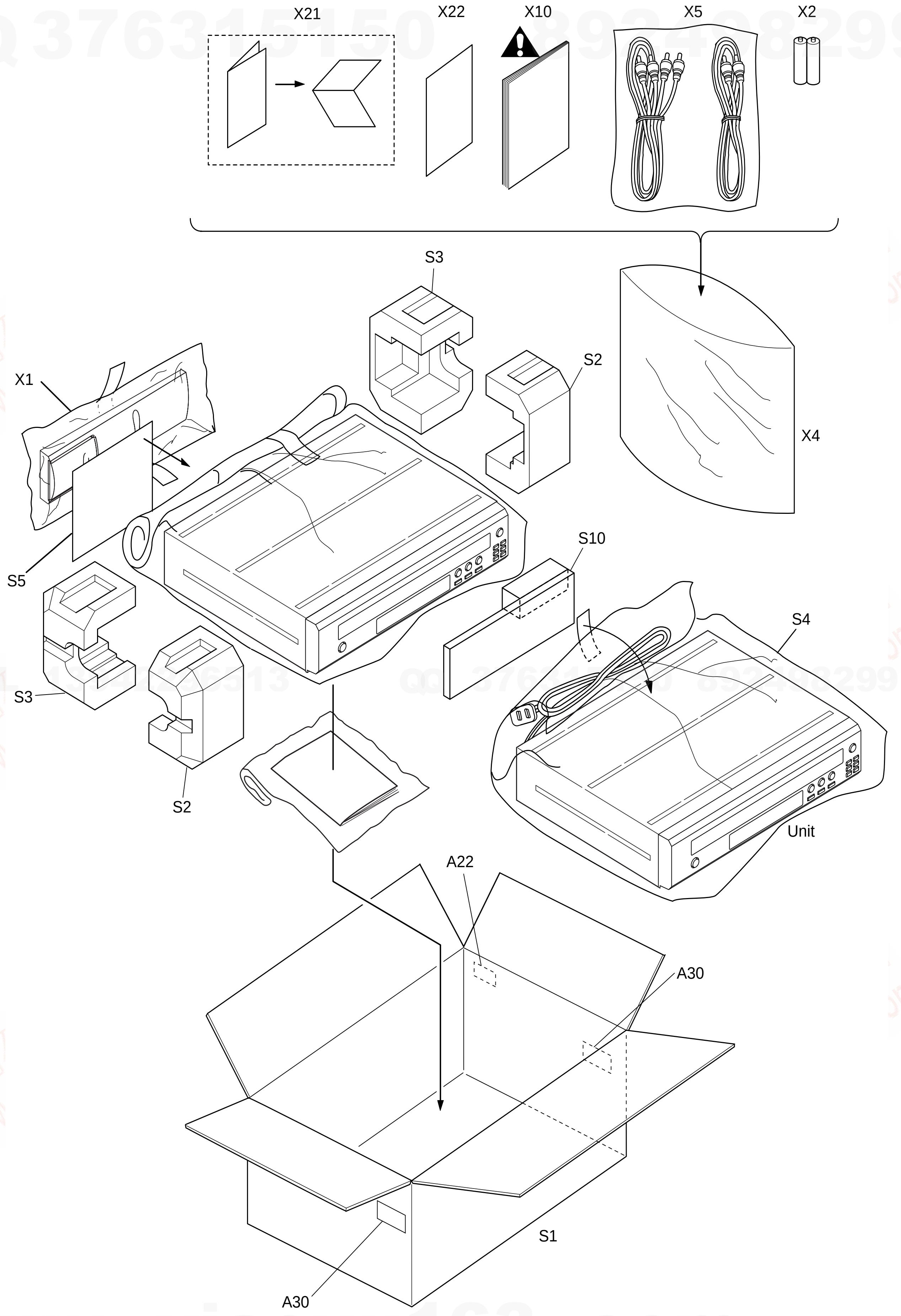
# EXPLODED VIEWS
## Cabinet View 1



## Cabinet View 2



# Packing



# PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

**NOTE:**
Parts that are not assigned part numbers (---------) are not available.

| Safe. | Ref. No. | Description | Funai Parts No. | DENON Parts No. | Qty | New |
|---|---|---|---|---|---|---|
| | A1X | FRONT ASSEMBLY | 0VM204300 | 9H26000440 | 1 | |
| | A2 | TRAY PANEL ASSEMBLY | 0VM415644 | 9H26000441 | 1 | |
| | A3 | FOOT | 0VM406940A | 9H26000323 | 2 | |
| | A15 | CHASSIS | 0VM101293 | 9H26000412 | 1 | |
| | A16 | TOP COVER | 0VM203048 | 9H26000325 | 1 | |
| | A17 | REAR PANEL | 0VM204278 | 9H26000442 | 1 | |
| | A21 | LABEL, SERIAL NO. | --------- | | 1 | |
| | A22 | LABEL, BAR CODE | --------- | | 1 | |
| | A30 | LABEL, CONTROL | --------- | | 2 | |
| | 1B1 | SLIDE TRAY ASSEMBLY | N79F0GVC | 9H26000424 | 1 | |
| | 1B4 | LOADING PULLEY | 0VM304636 | 9H26000328 | 1 | |
| | 1B11 | MOTOR PULLEY | 21P7048 | 9H26000329 | 1 | |
| | 1B12 | BELT L | 0RM400160 | 9H26000330 | 1 | |
| | 1B31 | SLIDE TRAY GEAR(B) | 0VM304632 | 9H26000331 | 1 | |
| | 1B32 | SLIDE TRAY GEAR(A) | 0VM304631 | 9H26000332 | 1 | |
| | 1B33 | TRAY GUIDE SPRING | 0VM412360 | 9H26000333 | 1 | |
| | 1L016 | SCREW, P-TIGHT M3X8 WASHER+ | GCMP3080 | 9H26000351 | 1 | |
| | 1L017 | SCREW, P-TIGHT 3X12 WASHER HEAD+ | GCMP3120 | 9H26000352 | 1 | |
| | 1L023 | SCREW, SEMS M2.6X4 PAN HEAD+ | CPM39040 | 9H26000353 | 1 | |
| | 2B1 | TRAY GUIDE(L) | 0VM000136H | 9H26000414 | 1 | |
| | 2B2 | TRAY GUIDE(R) | 0VM000137I | 9H26000415 | 1 | |
| | 2B3 | BRACKET(TOP) | 0VM203160 | 9H26000336 | 1 | |
| | 2B6 | STOPPER BRACKET | 0VM411941 | 9H26000337 | 2 | |
| | 2B9 | WIRE TAPE | 0VM404993 | - | 3 | |
| | 2B10 | NON WOVEN FABRICS(35*20) | 0VM414360 | - | 1 | |
| | 2B11 | HOLDER, PCB | 0VM204153 | 9H26000416 | 1 | |
| | 2B12 | SHIELD PLATE | 0VM204262 | 9H26000417 | 1 | |
| | 2B15 | WASHER(D8) | 0VM408931 | 9H26000436 | | |
| | 2B18 | FFC CLAMPER | 0VM415656 | 9H26000418 | 1 | |
| | 2B21 | GASKET | 0VM415817 | 9H2 6000 437 | 1 | |
| | 2B22 | GASKET(B) | 0VM415818 | 9H2 6000 438 | 1 | |
| | 2B24 | DOUBLE SIDE TAPE | 0VM415819 | 9H2 6000 481 | 1 | |
| | 2B25 | RUBBER SHEET | 0VM415921 | 9H26000485 | 3 | |
| | 2L011 | SCREW, C-TIGHT M3X6 BIND HEAD | GBMC3060 | 9H26000303 | 7 | |
| | 2L012 | SCREW, C-TIGHT M3X5 BIND HEAD + | GBKC3050 | 9H26000301 | 4 | |
| | 2L021 | SCREW, C-TIGHT M3X5 BIND HEAD + | GBKC3050 | 9H26000301 | 6 | |
| | 2L031 | P-TIGHT SCREW 3X8 BIND + | GBMP3080 | 9H26000240 | 2 | |
| | 2L032 | P-TIGHT SCREW 3X8 BIND + | GBMP3080 | 9H26000240 | 4 | |
| | 2L033 | SCREW, A-TIGHT M3X8 BIND HEAD+ | DBK13080 | 9H26000254 | 13 | |
| | 2L041 | P-TIGHT SCREW 3X8 BIND + | GBMP3080 | 9H26000240 | 2 | |
| | 2L051 | SCREW, S-TIGHT M3X8 BIND + CHROME | GBMS3080 | 9H26000355 | 7 | |
| | 2L061 | P-TIGHT SCREW 3X8 BIND + | GBMP3080 | 9H26000240 | 2 | |
| | 2L081 | SCREW, S-TIGHT M3X8 BIND + CHROME | GBMS3080 | 9H26000355 | 1 | |
| | 2L091 | SCREW, C-TIGHT M3X6 BIND HEAD | GBMC3060 | 9H26000303 | 1 | |
| | 2L103 | P-TIGHT SCREW 3X8 BIND + | GBMP3080 | 9H26000240 | 1 | |
| | 2L104 | P-TIGHT SCREW 3X8 BIND + | GBMP3080 | 9H26000240 | 1 | |
| | D-3 | MOTOR(LOAD/TRAY) | MMDZB4EMM002 | 9H2 6000 419 | 1 | |
| | W1811 | 10P FFC AV TO PRS | WX1E8620-010 | 9H26000428 | 1 | |
| | W3002 | MOTOR CABLE MOTOR CABLE | WX1E8620-902 | 9H26000429 | 1 | |
| | W3003 | 20P FFC MAIN TO RELAY | WX1E8620-120 | 9H26000430 | 1 | |
| | W3004 | 14P FFC CONTROL TO RELAY | WX1E8620-014 | 9H26000431 | 1 | |
| | W3005 | 16P FFC AV TO MAIN | WX1E8620-016 | 9H26000432 | 1 | |

| Safe. | Ref. No. | Description | Funai Parts No. | DENON Parts No. | Qty | New |
|---|---|---|---|---|---|---|
| | W3006 | 22P FFC AV TO MAIN | WX1E8620-022 | 9H26000433 | 1 | |
| | W3007 | 9P FFC CONTROL TO MAIN | WX1E8620-009 | 9H26000434 | 1 | |
| | W3008 | 16P FFC AV TO CONTROL | WX1E8620-116 | 9H26000435 | 1 | |
| | W7001 | 7P FFC AV TO DVD-A PCB | WX1E8620-007 | 9H26000486 | 1 | |
| | **PACKING & ACCESSORIES** | | | | | |
| | S1 | GIFT BOX CARTON | 0VM306455 | 9H26000443 | 1 | |
| | S2 | FRONT PAD | 0VM101008A | 9H26000317 | 2 | |
| | S3 | REAR PAD | 0VM101007 | 9H26000318 | 2 | |
| | S4 | SET BAG | 0DM400731 | 9H26000316 | 1 | |
| | S5 | PAD | 0VM415718 | 9H26000421 | 1 | |
| | S10 | TRAY PAD | 0VM415859 | 9H2 6000 449 | 1 | |
| | X1 | REMOTE CONTROL UNIT | NA804UD | 9H26000444 | 1 | |
| | X2 | DRY BATTERY R6P/2S | XB0M451T0001 | - | 2 | |
| | X2 | or DRY BATTERY ES-GR6M-C | XB0M571GLP01 | - | | |
| | X4 | I/B BAG | 0DM400757 | 9H26000319 | 1 | |
| | X5 | AV CORD TSCKA-Y/RW100 | WPZ0102TM015 | 9H26000226 | 1 | |
| | X5 | or AV CORD RCA(M*2)TO RCA(M*2) | WPZ0102LTE01 | 9H26000243 | 1 | |
| ⚠ | X10 | OWNER'S MANUAL | 0VMN03788 | 9H26000445 | 1 | |
| | X21 | WARRANTY SHEET | 0VM305871 | - | 1 | |
| | X22 | SERVICE CENTER SHEET | 0VM413951B | - | 1 | |
| | **ELECTRICAL PARTS** | | | | | |
| | | DVD MAIN CBA UNIT | N79DLGUP | 9H26000446 | 1 | |
| | | PROGRESSIVE CBA UNIT | 0VSA14428 | 9H26000426 | 1 | |
| | | CHG-MAIN CBA ASSEMBLY | 0VSA14454 | 9H26000447 | 1 | |
| | | TRAY CBA | 0VSA13569 | 9H26000487 | 1 | |
| | | DVD AUDIO CBA | 0VSA14451 | 9H26000488 | 1 | |